

# ***Test Build and Control (TBL) CSCI***

## **Requirements and Design Specifications**

**Thor Release**

**Design Panel 2/3 Review**

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KSC, Florida

# Software Requirements and Design Specification

## Thor Release

### 1. CSCI Test Build & Control (TBL)

#### 1.1 CSCI Test Build & Control Introduction

##### 1.1.1 CSCI Test Build & Control Overview

Test Build and Control resides in the Shuttle Data Center (SDC) and provides the capability to create, populate, and install the tables and files that make up a Test Configuration Identifier (TCID). For each TCID, tables will be created for a CLCS Function Designator (FD) Directory, the CLCS Gateway Processor(s), a TCID Description, and other tables as required. Tables will be populated with data extracted from the CLCS Database Shuttle Automated Function Executive (DBSAFE) Database and data derived through software processing. Installation will generate deliverable files based on the content of the TCID tables, and install the deliverable TCID files, application software files (including Health and Fusion applications) and Dynamic Data Visualization Tool (DDVT) files into the TCID Staging Area for subsequent transfer to a CLCS set.

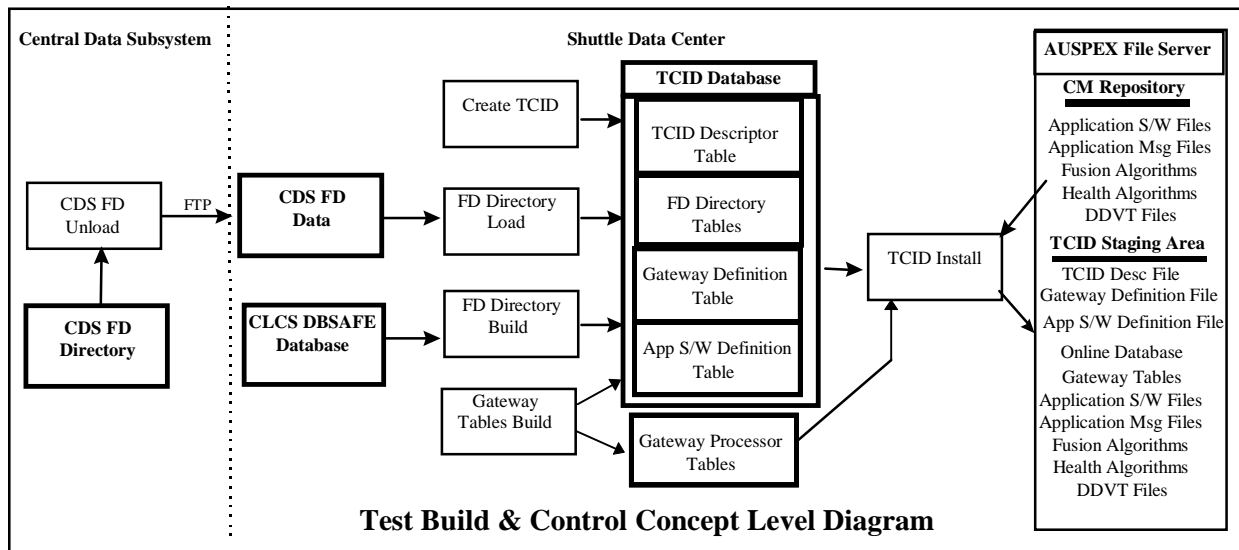


Figure 1.1-1

##### 1.1.2 CSCI Test Build & Control Operational Description

Creation of a TCID is initiated at user request via a Graphical User Interface (GUI). The user selects specific options and supplies input parameters required for creating the TCID structure. Via the Create TCID software, the user is verified as a valid user and the tables that make up the TCID are created with appropriate permissions.

For Redstone and Thor, after creating the TCID structures the user initiates a CDS function via the CCMS System Interface (CMSI) to extract FD information from the CDS FD Directory. Once data is extracted, the user transfers the extracted data to the SDC via FTP. Then via a GUI, the user initiates a process to load the CDS FD data into the FD Directory Tables of a CLCS TCID structure. For Thor, the user has the capability to specify loading all extracted data or a subset.

After TCID tables are created and loaded with CDS FD data, the user initiates the FD Directory Build process via a GUI to populate TCID tables with derived data and data extracted from the CLCS DBSAFE Database. The required data is selected based on criteria input by the user when initiating the build process and from data defined

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in the CLCS DBSAFE Database. FD information (i.e., compiler data, hardware data, and test end item address data) is pulled from the CLCS DBSAFE Database and processed into the FD Directory tables. For Redstone, only GSE and Fusion FD data is obtained from the CLCS DBSAFE Database. For Thor, in addition to that which was provided in Redstone, Launch Data Bus (LDB) data, Pulse Code Modulated (PCM) data, System Status FD data, and other supporting data (e.g., converted type information, enumerated data type information, etc.) is obtained from DBSAFE and processed into the FD Directory tables.

Following successful population of the FD Directory Tables, the user initiates the Gateway Table Build process via a GUI. The user specifies the Gateway(s) for which processing tables are to be populated. For each Gateway selected, test end item address data is pulled from the FD Directory and processed into appropriate tables. For Redstone, Gateway Tables are limited to GSE data sources. For Thor, Gateway Tables can be built for GSE, LDB, [CSGW](#) and PCM data sources.

After successful completion of the TCID create and build processes, a TCID Install process is initiated by the user via a GUI. The installation process extracts data from the TCID tables, organizes the data into deliverable files, and places the deliverable set of files into a TCID Staging Area. In addition, the installation process selects application files from the CM Repository and moves these to the TCID Staging Area. The deliverable set of files consists of Online Database (OLDB) files, Gateway Table file(s), Application Software files (Test End Item Managers, Data Fusion algorithms, Data Health algorithms, DDTV files, etc.), a TCID Description file, a Gateway Definition file, an Application Software Definition file, and other files as needed to support real time processing.

## 1.2 CSCI Test Build & Control Specifications

### 1.2.1 CSCI Test Build & Control Groundrules

The following groundrules and assumptions apply to the Test Build and Control CSCI:

- Only one TCID will be processed at a time within a single session.
- A Relational Database Management System (RDBMS) will be provided in the SDC to support the creation, population and installation of TCID data.
- User access to SDC-resident Test Build and Control components will be controlled via the access control mechanisms (HTML forms) developed to support CCMS Support Software replatform. Users must be on a valid subnet, have valid accounts on the SDC, and have permissions to execute the build functions.
- The Simulation System will access the FD Directory to create the model databases using the same approach used to support the Shuttle Ground Operations Simulation (SGOS) replatform effort. Changes in data fields in the FD Directory may require changes to the Simulation CSCI.
- The Data Recording, Archival & Retrieval CSCI will access the FD Directory to create the CLCS AP file. This file provides the information necessary to retrieve and evaluate command/measurement data that has been recorded in the SDC on a TCID and FD basis.
- Operational responsibilities for creating, populating and installing a TCID will belong to USA LPS S/W Integration Department.
- The Consolidated Shuttle Data Stream Gateway relies on the CCMS Common Data Buffer FIFO data stream to supply existing CCMS measurement data to the Consolidated Systems Gateway. This will force a dual build activity - one build for CCMS and one build for CLCS.
- The TCID will not contain a reference to the OS version of each supported subsystem/platform.

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### 1.2.2 Create TCID CSC

#### 1.2.2.1 Create TCID Ground Rules

- RDBMS database instances and tablespaces will be created and deleted by a Database Administrator. These will be pre-allocated in advance of TCID creation.
- For Redstone, directories and files created for a specific TCID will be manually removed from the TCID Staging Area on the AUSPEX file server when the TCID is no longer needed..

#### 1.2.2.2 Create TCID Functional Requirements

Create TCID provides the database tables into which FD information will be stored on a TCID by TCID basis.

(NOTE: TCID Tables are described in detail in the Test Build and Control Interface Description Document).

##### 1.1 Create TCID shall accept as user input:

- TCID Name and Revision
- Test Build Software Version
- TCID Type.

##### 1.2 Create TCID shall create FD Directory Tables to store the following information:

- Common FD Data (e.g., FD Name, Nomenclature, DB-RSYS, etc.)
- Type-specific FD Data (e.g., discrete states, analog coefficients, enumerated types, etc.)
- Source-specific FD Data (e.g., GPC Port, HIM number, RTU number, etc.).

##### 1.3 Create TCID shall create TCID configuration tables to store the following information:

- TCID Description
  - TCID Name
  - TCID Revision
  - Control Room Type
  - TCID Description File Name
  - FD Directory Build/Edit Revision
  - FD Directory Build/Edit Revision Date and Time
  - Gateway Tables Build/Edit Revision
  - Gateway Tables Build/Edit Revision Date and Time
  - Installation Build/Edit Revision
  - Installation Build/Edit Revision Date and Time
  - Compatible SCID Version
- Gateway Definition
  - Gateway ID
  - Gateway Tables present
- Application S/W Definition
  - TCID Responsible System
  - Databank Responsible System
  - Program Index
  - Program File Type
  - Program Name
  - Program Revision
  - Program Size.

##### 1.4 Create TCID shall dynamically size the tables of a TCID based upon the type of TCID being created.

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- 1.5** Create TCID shall create files, directories and file system links to accommodate storing and accessing TCID products and reports generated by other Test Build and Control components.
- 1.6** Create TCID shall create database views of the data in the FD Directory to support TCID Install processing.
- 1.7** Create TCID shall create database views of data in the FD Directory to support Data Analysis and Presentation Application File (AP File) build processing.
- 1.8** Create TCID shall create database views of data in the FD Directory to support Simulation Model Databank build processing.
- 1.9** Create TCID shall update the TCID Description Table with the following information:
  - TCID Name
  - TCID Revision (set to zero)
  - TCID Create Date and Time
  - Test Build Software Version.
- 1.10** Create TCID shall generate the following output:
  - Schemas for FD Directory Tables, Load Configuration Tables, and other tables/views as required
  - Updated TCID Description Table
  - Status report (errors, warnings, completion codes, etc.)

### 1.2.2.3 Create TCID Performance Requirements

There are no known performance requirements for Create TCID at this time.

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### 1.2.2.4 Create TCID Design Specifications

Create TCID function executes on the SDC to build the database tables and views for storing and retrieving TCID information. The tables and views are created in tablespaces owned by the TCID which have been pre-allocated in a database instance by a Database Administrator.

#### 1.2.2.4.1 Create TCID Detailed Data Flow

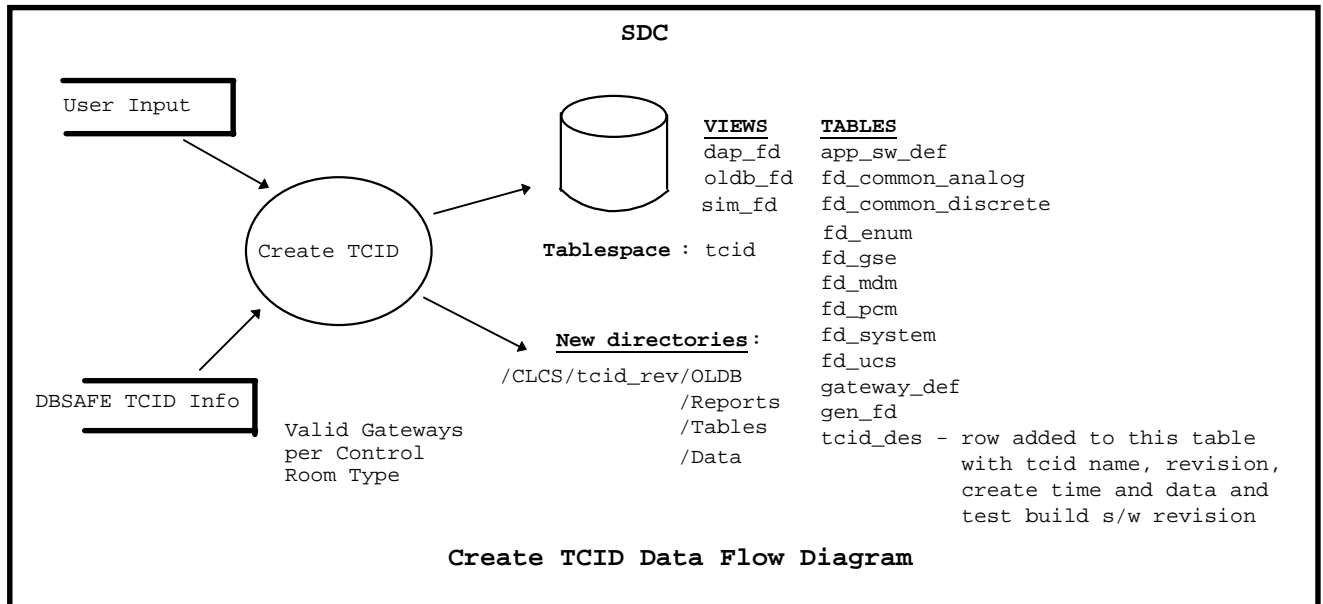


Figure 1.2-1

#### 1.2.2.4.2 Create TCID External Interfaces

Create TCID produces a list of Gateways valid for the specific TCID being built (e.g., Firing Room, Hypergolic Maintenance Facility or Complex Control Set). This list is used by FD Directory Build and Gateway Table Build to limit Gateway selections.

##### 1.2.2.4.2.1 Create TCID Message Formats

Create TCID will display error, warning, and informational messages to the user via an HTML interface. Additionally, all messages will be logged to a log file for problem analysis.

The format of messages generated by Create TCID will be as follows:

“csc\_name-nnn-a: message text” where

- csc\_name will be CRTD
- nnnn is a sequence of numbers associated with the message 0001 through 9999
- a is the type of message
  - E - error
  - W - warning
  - I - information
- message text is self-explanatory

All error messages (CRTD-nnnn-E) will cause the Create TCID process to abort.

Warning messages (CRTD-nnnn-W) may have an affect the results of processing.

Informational messages (CRTD-nnnn-I) have no effect on processing.

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### 1.2.2.4.2.2 Create TCID Display Formats

The following diagram illustrates the HTML form used to initiate the creation of a CLCS TCID.

### Create TCID Utility

Submission of this completed form will initiate the creation of TCID tables necessary for a CLCS TCID Build flow. Prerequisites to performing this function are the allocation of a tablespace and assignment of a TCID userid to the tablespace.

**Software Release Level:**

<input checked="" type="radio"/> Redstone	<input type="radio"/> Thor	<input type="radio"/> Atlas	<input type="radio"/> Titan	<input type="radio"/> Scout
---	----------------------------	-----------------------------	-----------------------------	-----------------------------

**TCID Type:**

<input checked="" type="radio"/> Firing Room	<input type="radio"/> HMF	<input type="radio"/> CCS
--	---------------------------	---------------------------

<b>TCID Name:</b> <input type="text"/>	<b>TCID Rev:</b> <input type="text"/>
--	---------------------------------------

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*RDM: [LarryCarr](#)*  
*Last Revised: November 9, 1997 11:17:02 EST*

Figure 1.2-2

### 1.2.2.4.2.3 Create TCID Input Formats

Input is entered on the HTML form illustrated above. The Software Release Level is required and identifies the version of Create TCID to use in allocating the directories, files and database tables of a TCID. TCID Type is required and is used to dynamically size the database tables and to generate a list of valid gateways for FD Directory Build and Gateway Table Build.

### 1.2.2.4.2.4 Create TCID Printer Formats

Create TCID does not generate any reports to be printed. The HTML displays may be printed using the existing print capabilities of the browser program.

### 1.2.2.4.2.5 Create TCID Interprocess Communications

Create TCID does not communicate with any other CSC's.

### 1.2.2.4.2.6 Create TCID External Interface Calls (e.g., API Calling Formats)

Create TCID does not interface with any other CSC's.

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### 1.2.2.4.2.7 Create TCID Table Formats

Create TCID table formats are described in the CSCI Test Build and Control Interface Description Document.

### 1.2.2.4.3 Create TCID Test Plan

#### Requirements:

1.2.2.2-1.1, 1.2.2.2-1.2, 1.2.2.2-1.3, 1.2.2.2-1.4, 1.2.2.2-1.5, 1.2.2.2-1.6, 1.2.2.2-1.7, 1.2.2.2-1.8, 1.2.2.2-1.9, 1.2.2.2-1.10

#### Objective:

Test Cases will demonstrate the Create TCID Process. The tests will encompass the creation of TCID file, directory, and database structures from initiation through successful completion with scenarios to demonstrate error handling.

#### Test Cases:

1. Normal TCID Create  
Expected Results: Messages will indicate that tables have been created and access granted.
2. Missing TCID Name  
Expected Results: Error messages will be output that a TCID Name must be selected.
3. Missing TCID Rev  
Expected Results: Error message will be output that TCID Rev must be selected.
4. Duplicate TCID Structure  
Expected Results: Error message will be output that the TCID Structure already exists.



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### 1.2.3 CDS FD Unload CSC

#### 1.2.3.1 CDS FD Unload Ground Rules

- For Redstone, the CLCS DBSAFE Database will provide GSE and Fusion FD information. All other FD information will be obtained from the CDS FD Directory.
- For Thor, the CLCS DBSAFE Database will provide GSE, LDB, PCM, System Status, Countdown Time (CDT), Mission Elapsed Time (MET), Enumerated Type and Fusion FD information. Other FD information will be obtained from the CDS FD Directory.
- For Redstone and Thor, user access to the CDS FD Directory unload process will be controlled through the CDS CCMS System Interface (CMSI). Users must have valid accounts on CDS, permissions to access CMSI and CMSI permissions to execute the function.

#### 1.2.3.2 CDS FD Unload Functional Requirements

- 1.1 CDS FD Unload accept as user input.
  - TCID name
  - Gateways to be unloaded
  - Output pathname.
- 1.2 For GSE, LDB, UCS and PCM data sources, CDS FD Unload shall limit the output data generated to the Gateways specified by the user.
- 1.3 CDS FD Unload shall extract FD information for all required FD's from the CDS FD Directory.
- 1.4 CDS FD Unload shall generate a FDID number for each extracted FD.
- 1.5 CDS FD Unload shall replace the CCMS System Software Revision Number (SSRN) with generated FDID number.
- 1.6 CDS FD Unload shall convert CDS FD information into CLCS compatible form (scaling, coefficients, buffer length, etc.)
- 1.7 CDS FD Unload shall convert extracted FD data from BCD to ASCII.
- 1.8 CDS FD Unload shall generate the following output:
  - FD Common Data File
  - PCM FD Data File
  - GSE FD Data File
  - MDM FD Data File
  - UCS FD Data File
  - System FD Data File
  - Discrete FD Data File
  - Analog FD Data File
  - Calibration FD Data File.

#### 1.2.3.3 CDS FD Unload Performance Requirements

There are no known performance requirements for CDS FD Unload at this time.

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### 1.2.3.4 CDS FD Unload Design Specifications

The Central Data System (CDS) Function Designator (FD) Directory Unload procedure is executed on CDS using the CCMS Support Software Interface (CMSI). Data files are produced from a Test Configuration Identifier (TCID) on CDS to be loaded into the FD Directory tables.

#### 1.2.3.4.1 CDS FD Unload Detailed Data Flow

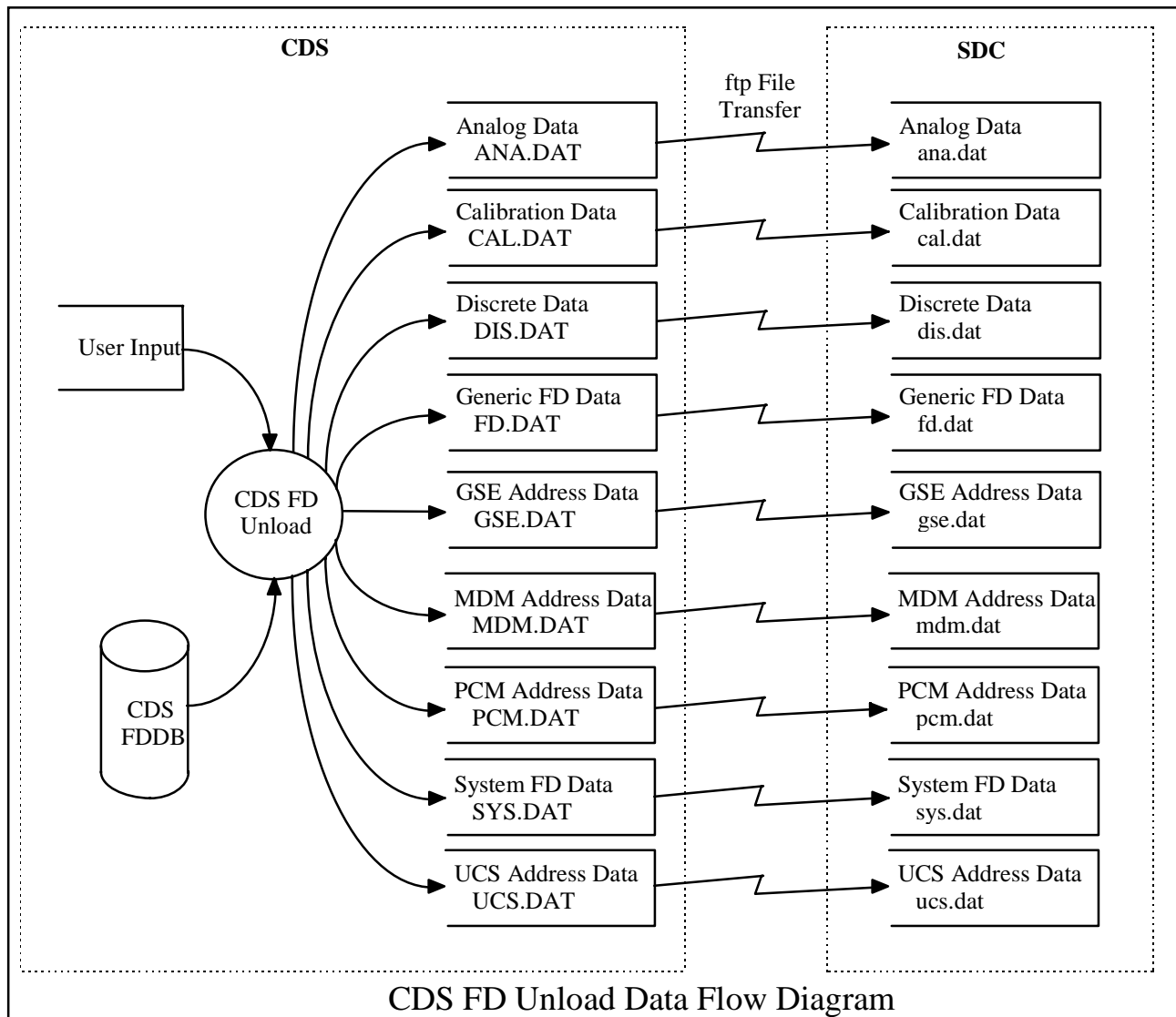


Figure 1.2.-3

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### 1.2.3.4.2 CDS FD Unload External Interfaces

CDS FD Unload produces several SQL\*Loader output files (as illustrated above) which are input to the FD Directory Load CSC.

#### 1.2.3.4.2.1 CDS FD Unload Message Formats

Batch job status messages are provided by the CDS operating system and the CMSI interface.

#### 1.2.3.4.2.2 CDS FD Unload Display Formats

CDS FD Unload sample CMSI transcript follows.

```
*CMSI
CMSI#33
.~
CMSI33 - RELEASE IE12

AI1736,P,JF,041 ,LOCKHEED,7-5042
.
07/11/97-11:43

READY
** FDDBDUMP
TCID NAME?? SHH16A
TCID SOFTWARE REV LEVEL?? H1
OUTPUT DIRECTORY CAT/FILE STRING?? AIA001/JIM/CLCS/SHH16A
DEFERRED QUEUE (Y/N)?? N
disposition? J
JOB BEING PROCESSED

SNUMB 8014V

8014V -00 EXECUTING @ 10.661
8014V -01 WAIT-ALOC @ 10.662
8014V -01 EXECUTING @ 10.664
8014V -02 EXECUTING @ 10.665.
8014V -03 WAIT-PERIP @ 10.681
8014V -03 EXECUTING @ 10.683
8014V -03 TERMINATING @ 10.687
8014V - ONLINE OUTPUT FINISHED @ 10.688
normal termination
```

Figure 1.2-4

#### 1.2.3.4.2.3 CDS FD Unload Input Formats

Inputs are prompted for by the CMSI interface. The required parameters are the TCID name from which data is to be unloaded, the CCMS software revision level at which the TCID was created, and the CDS catalog file string in which the output files are to be written.

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### 1.2.3.4.2.4 CDS FD Unload Printer Formats

The CDS batch job initiated by CMSI provides output of operating system statistics. The FD Unload procedure produces one report found in report code 74 in activity 02 of the batch job. A sample of the output follows.

8014V 02 06-18-97 10.667											PAGE	2
1 FILES ALLOCATED,											BUFFERS	99
AREA #	1	RNG	1 -	1162	BASESIZE -	1162						
FILCD/AREA		RANGE	PAGESIZE	PAGES/PAGE	LINES/PAGE	LLINKS	ALOC	LLINKS	NEC	ACCESS	MODE	INVENTORY
FD/ 1		1- 1162	640	1	63	2327		2326		READ		80%
CPU STATISTICS FOR FD UNLOAD FOR TCID SHH16A												
FUNCTION DESIGNATOR COUNTS BY DATA TYPE												
CPU NAME	THDS	AM PA	AS	DPM PDP	DPS	DM PD	DS	FP	AMDP	MWDP	OTHERS	TOTALS
GS1A	0	638	12	44	33	1898	958	0	0	0	0	3583
GS2A	0	223	4	16	12	578	294	0	0	0	0	1129
PG1	0	18	0	8	0	37	0	0	0	0	42	105
TOTALS	0	881	16	68	45	2513	1252	0	0	0	42	4817

Figure 1.2-5

### 1.2.3.4.2.5 CDS FD Unload Interprocess Communications

CDS FD Unload selects data from a CDS TCID and creates files for transfer to SDC. These files are used by the FD Directory Load CSC. There is no direct communication between these CSCs.

### 1.2.3.4.2.6 CDS FD Unload External Interface Calls (e.g., API Calling Formats)

### 1.2.3.4.2.7 CDS FD Unload Table Formats

### 1.2.3.4.3 CDS FD Unload Test Plan

#### Requirements:

1.2.3.2-1.1, 1.2.3.2-1.2, 1.2.3.2-1.3, 1.2.3.2-1.4, 1.2.3.2-1.5, 1.2.3.2-1.6, 1.2.3.2-1.7, 1.2.3.2-1.8

#### Objective:

Testing will consist of running CDS FD Unload for a TCID and comparing the output with report statistics from the CDS TCID Build obtainable from LPS System Build. The Function Designator counts from the output report should correspond to the number of records written to the data files on a data type and data source basis.

#### Test Cases:

##### 1. CDS FD Unload

Expected Results: Successful creation and transfer of the following files: ana.dat, fd.dat, pcm.dat, cal.dat, gse.dat, sys.dat, dis.dat, mdm.dat, and ucs.dat

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### 1.2.4 FD Directory Load CSC

#### 1.2.4.1 FD Directory Load Ground Rules

- FD information extracted from the CDS FD Directory will be directly accessible by the FD Directory Load function, either locally or through a Network File System (NFS).

#### 1.2.4.2 FD Directory Load Functional Requirements

- 1.1 FD Directory Load shall accept as user input:
  - TCID Name and Revision
  - CDS TCID Name
  - Specification of data to be loaded
- 1.2 FD Directory Load shall validate the user-supplied TCID Name against the TCID Description Table.
- 1.3 FD Directory Load shall load modified FD information into the FD Directory Tables per the load specification.
- 1.4 FD Directory Load shall insert into the TCID Description Table the CDS TCID name from which the load data was obtained.
- 1.5 FD Directory Load shall generate the following output:
  - Updated FD Directory Tables
  - Updated TCID Description Table
  - Status reports (SQL loader log file, error report, etc.)
  - A SQL\*Loader control file containing references to extracted data files.

#### 1.2.4.3 FD Directory Load Performance Requirements

There are no known performance requirements for FD Directory Load at this time.

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### 1.2.4.4 FD Directory Load Design Specifications

FD Directory Load executes on the SDC to populate the database tables of a TCID with FD information supplied in SQL\*Loader files generated by the CDS FD Unload CSC.

#### 1.2.4.4.1 FD Directory Load Detailed Data Flow

This diagram provides a pictorial representation of the data flow between external sources and destinations and the major and minor functions of FD Directory Load.

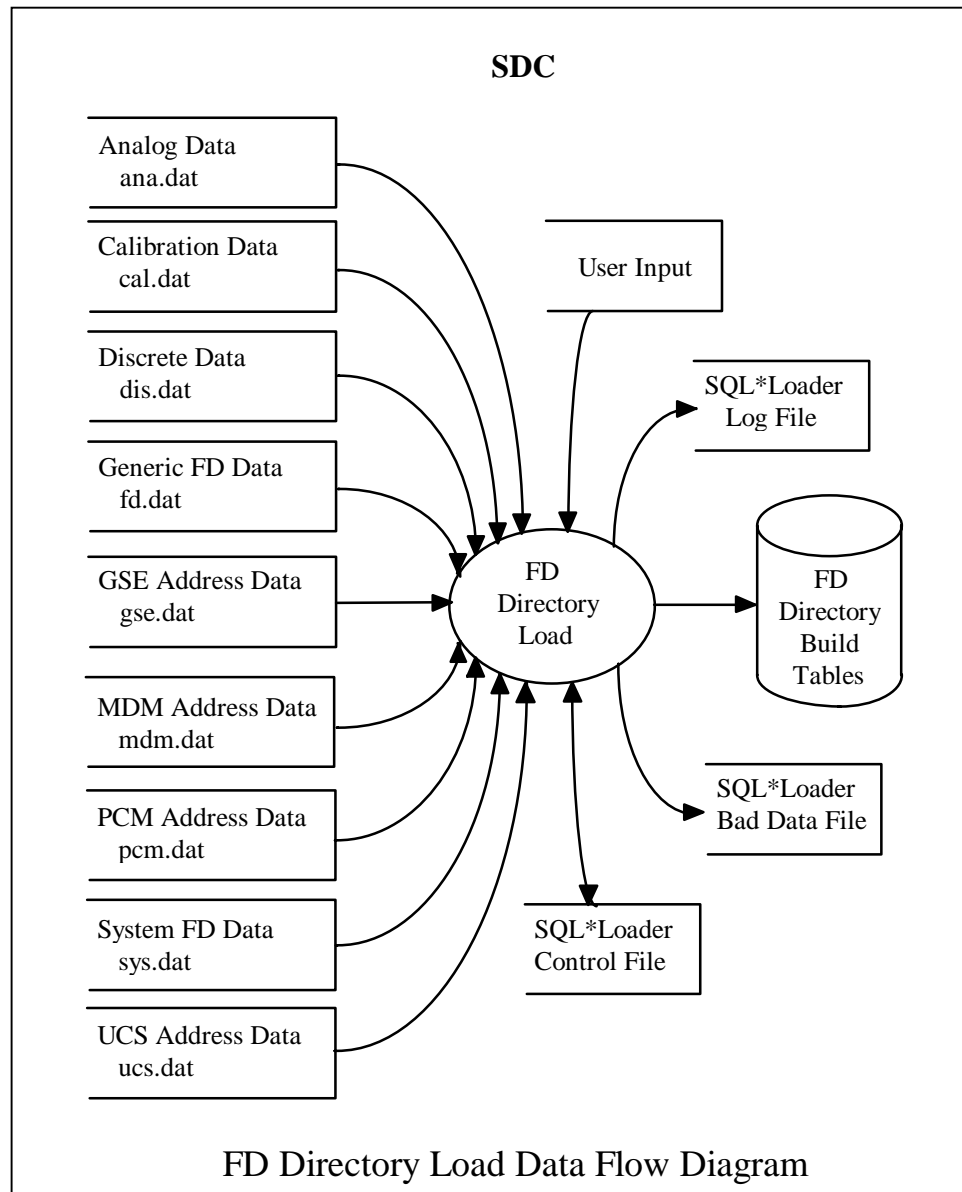


Figure 1.2-6

#### 1.2.4.4.2 FD Directory Load External Interfaces

FD Directory Load has no external interfaces with other CSC's.

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### 1.2.4.4.2.1 FD Directory Load Message Formats

The format of messages generated by FD Directory Load will be as follows:

“csc\_name-nnn-a: message text” where

- csc\_name will be FDDL
- nnnn is a sequence of numbers associated with the message 0001 through 9999
- a is the type of message
  - E - error
  - W - warning
  - I - information
- message text is self-explanatory

All error messages (FDDL-nnnn-E) will cause the FD Directory Load process to abort.

Warning messages (FDDL-nnnn-W) may have an affect the results of processing.

Informational messages (FDDL-nnnn-I) have no effect on processing.

FD Directory Load will display the following messages to the user. Additional messages and runtime statistics will be written on the SQL\*Loader log file produced by the process.

FDDL-0001-E: TCID name is mandatory.

FDDL-0002-E: TCID xxxxxx not found.

FDDL-0003-E: Unable to log on to TCID xxxxxx,.

FDDL-0004-E: User must belong to group clcssw.

FDDL-0003-E: Data file pathname is mandatory.

FDDL-0004-E: Invalid pathname for data and/or output files.

FDDL-0005-E: Unable to find data file xxxxxxxx.

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### 1.2.4.4.2.2 FD Directory Load Display Formats

The following diagram documents the HTML display used to initiate the FD Directory Load process.

### CLCS Function Designator Directory Load

To load data extracted from a TCID on CDS, select the software release level, enter the TCID Name and the pathname of the directory containing the data and an optional pathname of the directory for log files (default will be the same directory as the data). Select the tables to be loaded and click "Perform Load".

**Software Release Level:**

<input checked="" type="radio"/> Redstone	<input type="radio"/> Thor	<input type="radio"/> Atlas	<input type="radio"/> Titan	<input type="radio"/> Scout
---	----------------------------	-----------------------------	-----------------------------	-----------------------------

Enter TCID Name:	<input type="text"/>	Enter TCID Rev:	<input type="text"/>
Enter pathname of CDS FD Unload data files:	<input type="text" value="/CLCS/"/>		
CDS TCID Name:	<input type="text"/>		
Enter pathname of output (log files, bad data files):	<input type="text" value="/CLCS/"/>		

Select which tables to load:

- ☒ fd.dat data for GEN\_FD Table
- ☒ ana.dat data for FD\_COMMON\_ANALOG Table
- ☒ dis.dat data for FD\_COMMON\_DISCRETE Table
- ☒ sys.dat data for FD\_SYSTEM Table
- ☐ gse.dat data for FD\_GSE Table
- ☒ mdm.dat data for FD\_MDM Table
- ☒ pcm.dat data for FD\_PCM Table
- ☐ ucs.dat data for FD\_UCS Table
- ☒ cal.dat data for CAL\_FD Table

<input type="button" value="Perform Load"/>	<input type="button" value="Clear Fields"/>
---	---

*Author/Curator: CLCS Test Build and Control / USA 5222*  
*RDM: [Larry Carr](#)*  
*Last Revised:*

Figure 1.2-7



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### 1.2.4.4.2.3 FD Directory Load Input Formats

Input is entered on the HTML form illustrated above. The TCID Name is required and must have previously been created by the Create TCID CSC. The pathname of the CDS FD Unload data files is required and must be a directory containing the data files produced by the CDS FD Unload CSC. The user must have read permissions to these files. The CDS TCID name is optional and indicates from which CDS TCID the data was unloaded. The pathname of the output files is optional. The default is the same directory as the data file directory. The user must have write permissions to this directory. There must be at least one table selected to load.

### 1.2.4.4.2.4 FD Directory Load Printer Formats

SQL\*Loader will provide a log file and any bad data or error files as needed. The FD Directory Load procedure itself produces no reports.

### 1.2.4.4.2.5 FD Directory Load Interprocess Communications

FD Directory Load populates tables in a TCID created by the Create TCID CSC using data extracted from CDS by the CDS FD Unload CSC. There are no direct communications between these CSCs.

### 1.2.4.4.2.6 FD Directory Load External Interface Calls (e.g., API Calling Formats)

There are no external interface calls associated with FD Directory Load.

### 1.2.4.4.2.7 FD Directory Load Table Formats

The table formats used are described in the CSCI Test Build and Control Interface Definition Document.

### 1.2.4.4.3 FD Directory Load Test Plan

#### 1.2.4.4.3.1 Test Environment

Validation testing for FD Directory Load will take place in the Shuttle Data Center development environment as described below:

1. FD Directory Load validation will occur in the SDC lab.
2. FD Directory Load will be initiated on the SDC CAB Server.
3. FD Directory tables will reside in the DEV6 ORACLE database on the CAB Server.

#### 1.2.4.4.3.2 Prerequisites

1. Table spaces must be created for the subject TCID.
2. All required database permissions must be set for the subject TCID.
3. Create TCID CSC must be successfully executed to create the FD Directory tables for the subject TCID.
4. Subject TCID must exist in the TCID Description Table (Create TCID CSC).
5. CDS TCID data generated via the CDS FD Unload CSC must be in a directory accessible to the user.
6. User must belong to the clcssw group.

#### 1.2.4.4.3.3 Test Cases

##### Requirements:

1.2.4.2-1.1, 1.2.4.2-1.2, 1.2.4.2-1.3, 1.2.4.2-1.4, 1.2.4.2-1.5

##### Objective:

Tests will demonstrate that FD Directory Load correctly populates the CLCS FD Directory tables with the extracted CDS FD information. Test scenarios are included to demonstrate both successful completion and error handling.

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### Test Cases:

1. Execute the FD Directory Load with invalid data for each entry field.  
Expected Results: Errors indicating no TCID selected, no CDS input directory provided, and no tables were selected for loading will be output.
2. Execute the FD Directory Load with no tables selected for loading.  
Expected Results: Error indicating that no data could be found will be output.
3. Execute the FD Directory Load with correct information specified.  
Expected Results: Successful population of the specified TCID with FD data. Reports and logs containing data reflecting successful results for the insertion of data into the TCID.

# Software Requirements and Design Specification

## Thor Release

### 1.2.5 FD Directory Build CSC

#### 1.2.5.1 FD Directory Build Ground Rules

- The DBSAFE CSCI will provide tables for each TCID that define the Vehicle Configuration Number (VCN), DB-RSYS, Database Userid, Control Room Type, Gateway Processor, and Address criteria required to extract Function Designator information from the CLCS DBSAFE Database into the FD Directory for a specified TCID.
- The DBSAFE CSCI will provide tables that define the grouping of Database Responsible Systems to TCID Responsible Systems (TCID-RSYS). There will be a one-to-many correspondence of TCID-RSYS to Command & Control Processors (i.e., a TCID-RSYS will not span multiple CCP's, but a CCP may support multiple TCID-RSYS's).
- TCID data selection criteria must be defined in the DBSAFE Database by the DBSAFE CSCI prior to initiating FD Directory Build.
- The DBSAFE CSCI will provide test end item FD data required to populate the FD Directory for the following sources: GSE, LDB, [CSGW](#), PCM.
- The new FDID's in the FD Directory will affect the Consolidated Systems Gateway.
- Fusion FD's will be restricted to currently supported data types (e.g. pseudo analog, pseudo discrete, pseudo digital pattern).

#### 1.2.5.2 FD Directory Build Functional Requirements

- 1.1 FD Directory Build shall accept as user input:
  - TCID Name and Revision
  - Test Build Software Release Level
  - Gateway build selection from a list of gateways.
  - *Build option (not yet supported)*
- 1.2 FD Directory Build shall, based on the TCID Name and Revision, obtain parameters from the CLCS DBSAFE Database that define the data selection criteria for a TCID. These include the following:
  - Control Room Type
  - Available Gateways
  - VCN's and associated Revision Numbers
  - Database Userid's
  - Formats
  - TCID-RSYS's

(NOTE: "Format" refers to the primary field of an FD's hardware end item address. For GSE, format equates to HIM number; for PCM format equates to telemetry format; etc.).
- 1.3 FD Directory Build shall validate the user-supplied TCID Name against the TCID Description Table.
- 1.4 FD Directory Build shall validate the user-supplied TCID Name and Revision against the TCID configurations defined in the CLCS DBSAFE Database.
- 1.5 FD Directory Build shall validate software compatibility against the Test Build Software Version contained in the TCID Description Table.
- 1.6 *FD Directory Build shall accept a Gateway build specification to add, delete or rebuild FD's for a specific Gateway, provided the Gateway is defined for the TCID in the CLCS DBSAFE Database. (not yet supported)*

# Software Requirements and Design Specification

## Thor Release

- 1.7 If no Gateway build specification is supplied, FD Directory Build shall generate FD data for all Gateways defined for the TCID in the CLCS DBSAFE Database.
- 1.8 FD Directory Build shall validate the TCID Configuration Definition is locked from update.
- 1.9 FD Directory Build shall validate the VCN's for the TCID are locked from update.
- 1.10 FD Directory Build shall validate the Database Userid's for the TCID are locked from update.
- 1.11 FD Directory Build shall validate the Formats for the TCID are locked from update.
- 1.12 FD Directory Build shall use the following criteria to include an FD in the FD Directory:
  - FD has a VCN association that is defined for the TCID in the CLCS DBSAFE Database
  - FD has a Link Indicator/Format association that is defined for the TCID in the CLCS DBSAFE Database
  - FD has a DB-RSYS association that is defined for the TCID in the CLCS DBSAFE Database
  - FD has a Database Userid association that is defined for the TCID in the CLCS DBSAFE Database
  - If an FD meets the above selection criteria on multiple VCN's or Formats, then the VCN or Format with the highest Database Userid priority is chosen.
- ~~1.13 FD Directory Build shall convert FD information extracted from the CLCS DBSAFE Database to appropriate formats (e.g., ASCII to Integer, etc.) as necessary.~~
- 1.13 FD Directory Build shall insert/update FD Directory tables with compiler-related, hardware-related and test end item address-related data obtained from the CLCS DBSAFE Database as determined by the above selection criteria. The information to be included for an FD shall depend upon FD source, type, and subtype.
- 1.14 FD Directory Build shall insert/update the FD Directory tables with System, System Status, and CDT FD information obtained from the CLCS DBSAFE Database.
- 1.15 FD Directory Build shall insert/update the Enumerated Type Table with enumerated class numbers, and associated enumerated values and their descriptions.
- 1.16 FD Directory Build shall assign a unique FDID to each FD.
- 1.17 FD Directory Build shall update the TCID Description Table with the following information:
  - FD Directory Revision
  - FD Directory Revision Date and Time
  - Control Room Type
- 1.18 FD Directory Build shall report an error and terminate processing if any of the following conditions are true:
  - TCID Name and Revision is indecipherable
  - TCID Name and Revision is not defined in the CLCS DBSAFE Database
  - FD Directory Build software is incompatible with the TCID structures
  - TCID Configuration defined for the TCID is not locked
  - VCN's defined for the TCID are not locked
  - Database Userid's defined for the TCID are not locked
  - Formats defined for the TCID are not locked.
- 1.19 FD Directory Build shall generate the following output:
  - Updated FD Directory Tables
  - Updated TCID Description Table
  - Status Report (warnings, errors, information, completion codes, etc.).

### 1.2.5.3 FD Directory Build Performance Requirements

There are no known performance requirements for FD Directory Build at this time.

# Software Requirements and Design Specification

## Thor Release

### 1.2.5.4 FD Directory Build Design Specifications

FD Directory Build is designed to be executed on SDC after the Create TCID CSC (and after FD Directory Load for Redstone) and before the Gateway Table Build and TCID Installation CSCs. FD Directory build selects TCID specific data from DBSAFE based on user input at execution and loads the data into the FD Directory tables which are used by Gateway Table Build and TCID Installation CSCs.

#### 1.2.5.4.1 FD Directory Build Detailed Data Flow

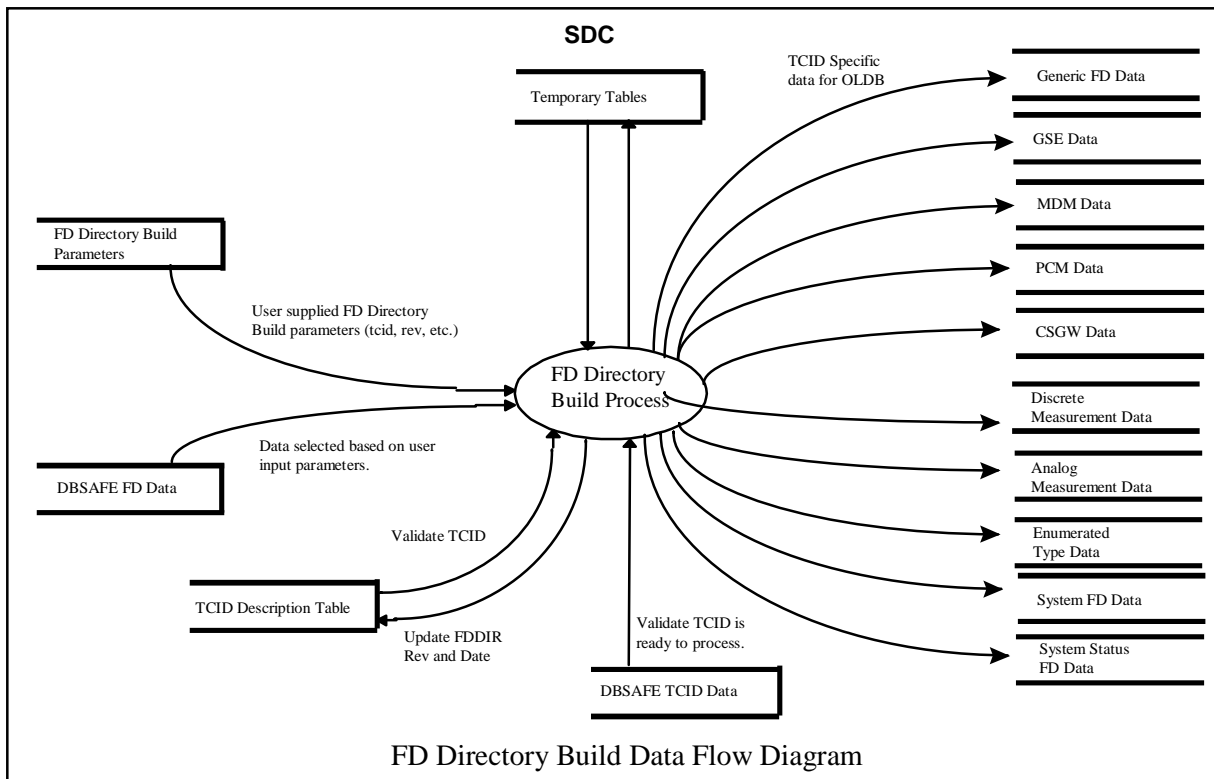


Figure 1.2-8

#### 1.2.5.4.2 FD Directory Build External Interfaces

FD Directory Build interfaces with the DBSAFE Database to obtain the TCID build selection criteria and Function Designator information.

FD Directory Build obtains a list of valid Gateways generated by Create TC ID for the TCID being built.

# Software Requirements and Design Specification

## Thor Release

### 1.2.5.4.2.1 FD Directory Build Message Formats

The format of messages generated by FD Directory Build will be as follows:

“csc\_name-nnn-a: message text” where

- csc\_name will be FDDDB
- nnnn is a sequence of numbers associated with the message 0001 through 9999
- a is the type of message
  - E - error
  - W - warning
  - I - information
- message text is self-explanatory

All error messages (FDDDB-nnnn-E) will cause the FD Directory Load process to abort.

Warning messages (FDDDB-nnnn-W) may have an affect on processing results.

Informational messages (FDDDB-nnnn-I) have no effect on processing.

FD Directory Build will display the following status messages to the user. Additionally, all messages will be logged in <path/logfile name> for problem analysis.

FDDDB-0001-E: Error on CONNECT to database.  
FDDDB-0002-E: Error selecting MAX rtcn\_fdid..  
FDDDB-0004-E: No matching TCID/rev in Description table.  
FDDDB-0005-E: Error selecting fds for gen\_fd table  
FDDDB-0006E: Error selecting measurement data for fd\_common\_discrete table  
FDDDB-0007-E: Error selecting stimulus data for fd\_common\_discrete table  
FDDDB-0008-E: Error selecting measurement data for fd\_common\_analog table  
FDDDB-0009-E: Error selecting stimulus data for fd\_common\_analog table  
FDDDB-0010-E: Error selecting common system data for fd\_system table  
FDDDB-0011-E: Error selecting gse source data for fd\_gse table  
FDDDB-0012-E: Error selecting mdm source data for fd\_mdm table  
FDDDB-0013-E: Error selecting pcm source data for fd\_pcm table  
FDDDB-0014-E: Error selecting ucs source data for fd\_ucs table  
FDDDB-0015-E: Error selecting calibration data for cal\_fd table  
FDDDB-0016-E: Error building temp tables.  
FDDDB-0017-E: Error creating temp\_src\_data table for <current\_src>.  
FDDDB-0018-E: Error selecting fds for fd\_%s source table.  
FDDDB-0019-E: No gateways specified for edit.  
FDDDB-0020-E: Error creating temp\_gw\_table.  
FDDDB-0021-E: Error inserting gateway list into temp\_gw\_dir table.  
FDDDB-0022-E: No TCID specified.  
FDDDB-0023-E: No userid specified.  
FDDDB-0024-E: Invalid command line arguments.  
FDDDB-0025-E: Error creating temp table for report values.  
FDDDB-0026-I: <time date> BEGIN FD Directory Build processing.  
FDDDB-0027-I: <time date> EXIT FD Directory Build processing.

# Software Requirements and Design Specification

## Thor Release

### 1.2.5.4.2.2 FD Directory Build Display Formats

The following diagrams document the HTML forms used to initiate the FD Directory Build process.

### CLCS FD Directory Build

---

Submission of this completed form will initiate the FD Directory Build process. Select the applicable software release level and enter a valid TCID Name and Rev. Edit option defaults to Add. Depress Select Gateway button to continue process.

**Software Release Level:**

<input checked="" type="radio"/> Redstone	<input type="radio"/> Thor	<input type="radio"/> Atlas	<input type="radio"/> Titan	<input type="radio"/> Scout
---	----------------------------	-----------------------------	-----------------------------	-----------------------------

TCID Name: <input type="text"/>	TCID Rev: <input type="text"/>
---------------------------------	--------------------------------

**Edit Option:**

<input checked="" type="radio"/> Add	<input type="radio"/> Delete
--------------------------------------	------------------------------

*Author/Curator: CLCS Test Build and Control / USA 5222*  
*RDM: [Larry Carr](#)*  
*Last Revised: November 14, 1997 08:21:00 EST*

Figure 1.2-9

# Software Requirements and Design Specification

## Thor Release

**File Edit View Go Bookmarks Options Directory Window Help**

### FD Directory Build – Gateway Selection

Submission of this completed form will initiate the FD Directory build for the specified Gateways. Default is All. To omit specific Gateways use check box and deselect Gateways. Depress FD Build button to submit form.

**Software Release Level:** Thor

**TCID Name:** SA088T **Rev:** 0

**CSGW Gateway Selection:**

☒ CSGW

**GSE Gateway Selection:**

☒ GS1A ☒ GS2A ☒ GS3A ☒ GS4  
☒ GS5

**LDB Gateway Selection:**

☒ LDBA

**PCM Gateway Selection:**

☒ GPCA ☒ ME1 ☒ ME2 ☒ ME3  
☒ OIA

*Author/Curator: CLCS Test Build and Control / USA 5222*  
*RDM: [Larry Carr](#)*  
*Last Revised:*

Figure 1.2-10



# Software Requirements and Design Specification

## Thor Release

### 1.2.5.4.2.3 FD Directory Build Input Formats

Two HTML forms are used to initiate FD Directory Build processing. Required inputs of Software Release Level, TCID Name and TCID Revision are entered on the first HTML form illustrated in Figure 1.2.-9. From the TCID Name and TCID Revision, the software obtains a list of the valid Gateways previously generated by Create TCID and dynamically generates a second HTML form, Figure 1.2-10. Required input of Gateways to be processed and the Build Option (*not yet supported*) are entered on the second HTML form illustrated in Figure 1.2-10.

### 1.2.5.4.2.4 FD Directory Build Printer Formats

FD Directory Build provides a report written to an output file in the Reports directory which the user can view or print. Additionally, all messages will be logged to a file in the Reports directory for problem analysis.

FD Directory Build Report Example:

FD DIRECTORY BUILD	
USER ID: SGG35A	DATE: 08-JUL-97
TCID: SGG35A	FDDDB REV: 14
TCID REV: 0	
BUILD DIRECTIVE: A	
GATEWAYS: GS1A GS2A	
CONTROL ROOM ID: FR	
TOTAL FDs: 4757	
STATUS MESSAGES:	
FDDDB-0026-I: 15:37:30 07/08/97	BEGIN FD Directory Build processing
FDDDB-0027-I: 15:40:32 07/08/97	EXIT FD Directory Build processing

# Software Requirements and Design Specification

## Thor Release

### 1.2.5.4.2.5 FD Directory Build Interprocess Communications

- Selects data from DBSAFE (CSC).
- Populates FD Directory tables created by Create TCID (CSC).
- FD Directory tables are used by Gateway Table Build (CSC) and TCID Install (CSC).

### 1.2.5.4.2.6 FD Directory Build External Interface Calls (e.g., API Calling Formats)

The FD Directory Build is invoked via an HTML form specifically developed for initiating this process.

### 1.2.5.4.2.7 FD Directory Build Table Formats

See table formats in the CSCI Test Build and Control Interface Definition Document.

### 1.2.5.4.3 FD Directory Build Test Plan

#### Requirements:

1.2.5.2-1.1, 1.2.5.2-1.2, 1.2.5.2-1.3, 1.2.5.2-1.4, 1.2.5.2-1.5, 1.2.5.2-1.6, 1.2.5.2-1.7, 1.2.5.2-1.8, 1.2.5.2-1.9, 1.2.5.2-1.10, 1.2.5.2-1.11, 1.2.5.2-1.12, 1.2.5.2-1.13, 1.2.5.2-1.14, 1.2.5.2-1.15, 1.2.5.2-1.16, 1.2.5.2-1.17, 1.2.5.2-1.18, 1.2.5.2-1.19, 1.2.5.2-1.20

#### Objective:

Tests will demonstrate that FD Directory Build populates the FD Directory tables. Test cases are included to demonstrate both successful completion and error handling.

#### Test Cases:

1. Invalid TCID Name  
Expected Results: Messages will indicate that an invalid TCID Name was entered.
2. Invalid TCID Rev  
Expected Results: Error messages will be output that the rev of the TCID is invalid.
3. TCID without the DBSAFE Locks Set  
Expected Results: Error message will be output that locks must be set in DBSAFE prior to executing FD Directory Build.
4. Normal FD Directory Build  
Expected Results: FD Directory tables are loaded with data for the requested TCID.

# Software Requirements and Design Specification

## Thor Release

### 1.2.6 Gateway Table Build CSC

#### 1.2.6.1 Gateway Table Build Ground Rules

- *The DBSAFE CSCI will provide telemetry characteristics (e.g., bandwidth, sync value, etc.) associated with PCM data sources as necessary to configure PCM Gateway equipment for acquiring a PCM data stream.* ([Atlas](#))
- [For Thor, since telemetry characteristics are not available from DBSAFE, a hand built file will be used to provide the files for the PCM Gateway.](#)
- Data for building Gateway Tables will be “sourced” from DBSAFE and not from data unloaded from CDS.
- No Gateway Processor tables will be generated for Fusion FD’s. Fusion FD’s will be managed by the build software similar to how Pseudo FD’s are currently managed.
- [Format information for the CSGW will not be loaded in DBSAFE. User generated files will be required containing format specifications.](#)

#### 1.2.6.2 Gateway Table Build Functional Requirements

[NOTE: For Thor, Gateway Table Build is limited to GSE, LDB, [CSGW](#) and PCM data]

- 1.1 Gateway Table Build shall accept as input from user:
  - TCID Name and Revision
  - Gateway Processor ID
- 1.2 Gateway Table Build shall validate the TCID Name and Revision against the TCID Description Table.
- 1.3 Gateway Table Build shall validate software compatibility against the Test Build Software Version contained in the TCID Description Table.
- 1.4 Gateway Table Build shall limit table build processing to Gateways specified via user input, which may be subset of those defined for the TCID.
- 1.5 For GSE Gateways, Gateway Table Build shall process input directives for reserving a specified number of 10 sample per second null entries in the sublist for changing FD sample rates in real-time.
- 1.6 Gateway Table Build shall output an warning message and discard further entries if the GSE main polling table list becomes full.
- 1.7 Gateway Table Build shall process FD information in the FD Directory to populate the following deliverable TCID files for GSE Gateways:
  - Command/Masurement Data Table (CMDT) - \*
  - Discrete Stimulus FDID Table -\*
  - Discrete Measurement FDID Table - \*
  - Polling Table
  - Engineering Unit Conversion Table
  - Analog 32-bit Measurement/Stimulus Table (generic)
  - Discrete Measurement Table (generic)
  - Discrete Stimulus Table (generic)
  - Digital Pattern Measurement/Stimulus Table (generic)
  - (\* - NOTE: Tables are being phased out in favor of generic tables)
  - [System Status Physical Table](#)
  - [System Status Logical Table](#)
  - [System Status HIM Table](#)

# Software Requirements and Design Specification

## Thor Release

- 1.8** Gateway Table Build shall process FD information in the FD Directory to populate the following deliverable TCID files for PCM Gateways
- Analog 32-bit Measurement Table
  - Analog 64-bit Measurement Table
  - Discrete Measurement Table
  - Digital Pattern Measurement Table
  - Format List Table
  - [System Status Physical Table](#)
  - [System Status Logical Table](#)
- 1.9** Gateway Table Build shall access [files DBSAFE](#) to obtain characteristics of PCM telemetry streams as needed to generate the following deliverable TCID files for the PCM Gateways:
- Format Description Table
    - format information table (bit rate, number of subframes, etc.)
    - area telemetry description table (bandwidths, sync patterns, etc.)
- 1.10** Gateway Table Build shall process FD information in the FD Directory to populate the following deliverable TCID files for LDB Gateways:
- LDB Data Table
  - [System Status Physical Table](#)
  - [System Status Logical Table](#)
- 1.11** [Gateway Table Build shall process FD information in the FD Directory to populate the following deliverable TCID files for the CS Gateway:](#)
- [Analog 32-bit Measurement Table](#)
  - [Analog 64-bit Measurement Table](#)
  - [Discrete Measurement Table](#)
  - [Digital Pattern Measurement Table](#)
  - [Digital Pattern Stimulus Table](#)
  - [System Status Physical Table](#)
  - [System Status Logical Table](#)
- 1.12** [Gateway Table Build shall extract information from user generated format specification files to generate the following deliverable TCID files for CS Gateway:](#)
- [CS Network Configuration Table](#)
  - [Measurement Interface Frame Tables](#)
  - [Time Offset Frame Tables](#)
  - [CS Tables](#)
- 1.13** Gateway Table Build shall provide a file for each Gateway identifying the Gateway name.
- 1.14** Gateway Table Build shall update the TCID Description Table with the following information:
- Gateway Tables Revision
  - Gateway Tables Revision Date and Time
- 1.15** Gateway Table Build shall update the Gateway Definition Table with the following information:
- Gateway ID
  - Gateway Tables present
- 1.16** Gateway Table Build shall generate the following output:
- Updated [GSE](#) Gateway Tables as defined above.
  - Updated TCID Description Table as defined above.
  - Updated Gateway Definition Table as defined above.
  - Status report (warning, errors, information, completion codes, etc.)

# Software Requirements and Design Specification

## Thor Release

### 1.2.6.3 Gateway Table Build Performance Requirements

There are no known performance requirements for Gateway Tables Build at this time.

# Software Requirements and Design Specification

## Thor Release

### 1.2.6.4 Gateway Table Build Design Specifications

Gateway Table Build executes on the SDC to generate the process control tables required by Gateway Processors to acquire data and issues commands from/to a test end item. Information needed to build the tables is obtained from the DBSAFE Database, the TCID's FD Directory and from user input.

For Thor, ~~four~~ ~~three~~ separate table build processes are provided:

- GSE Gateway Table Build
- PCM Gateway Table Build
- LDB Gateway Table Build
- [Consolidated System Gateway Table Build](#)

#### 1.2.6.4.1 GSE Gateway Table Build Detailed Data Flow

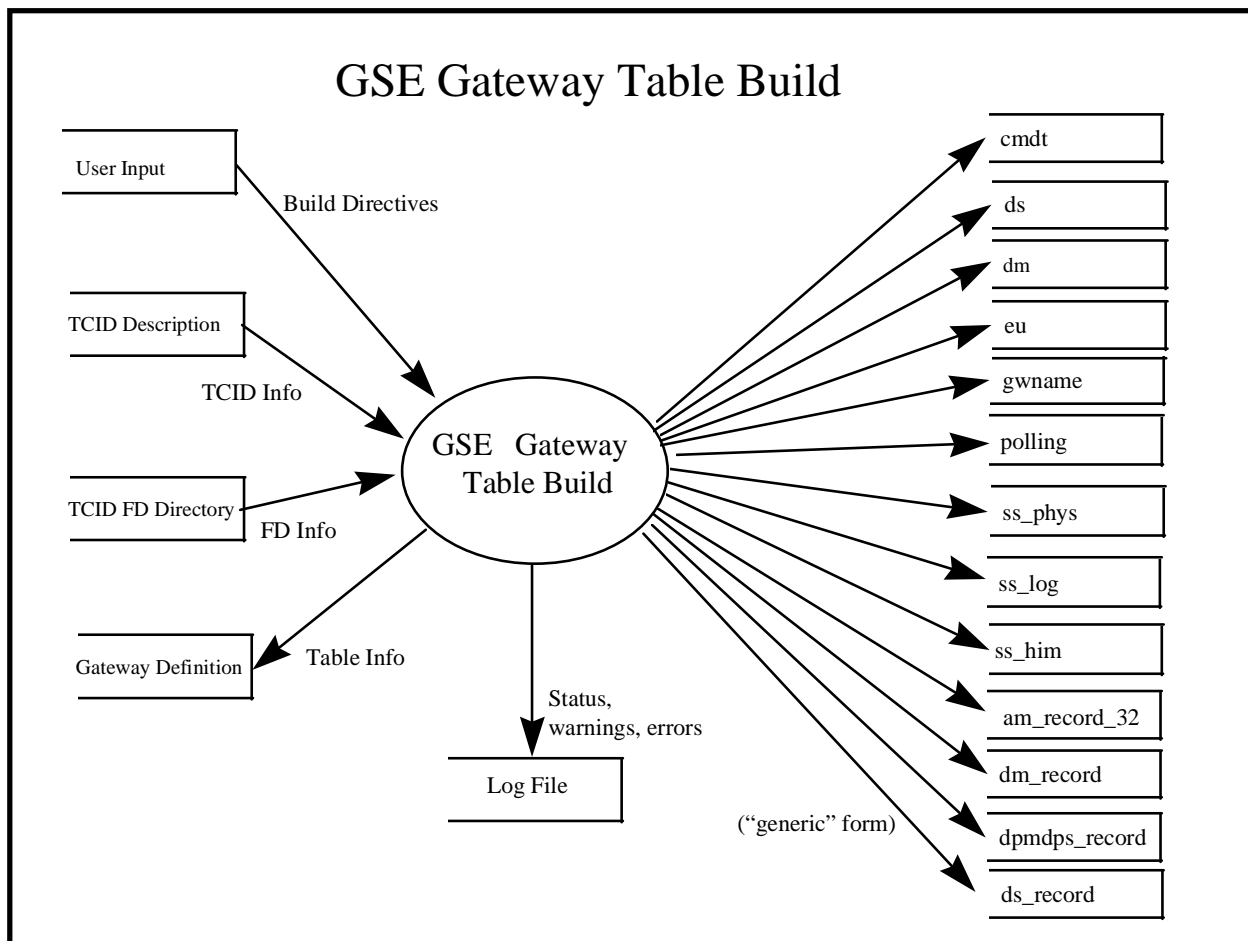


Figure 1.2-11

# Software Requirements and Design Specification

## Thor Release

### 1.2.6.4.2 PCM Gateway Table Build Detailed Data Flow

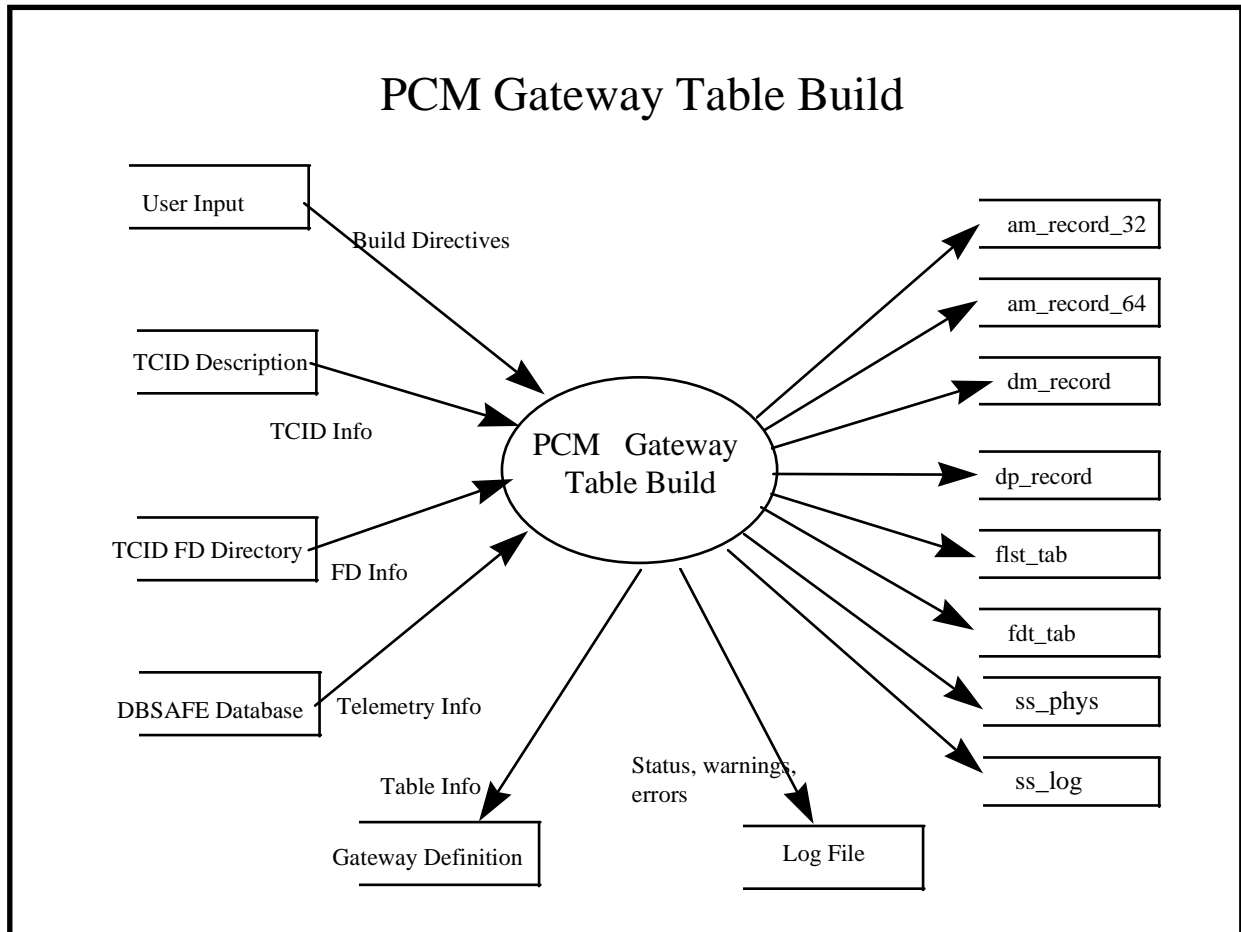


Figure 1.2-12

# Software Requirements and Design Specification

## Thor Release

### 1.2.6.4.3 LDB GSE Gateway Table Build Detailed Data Flow

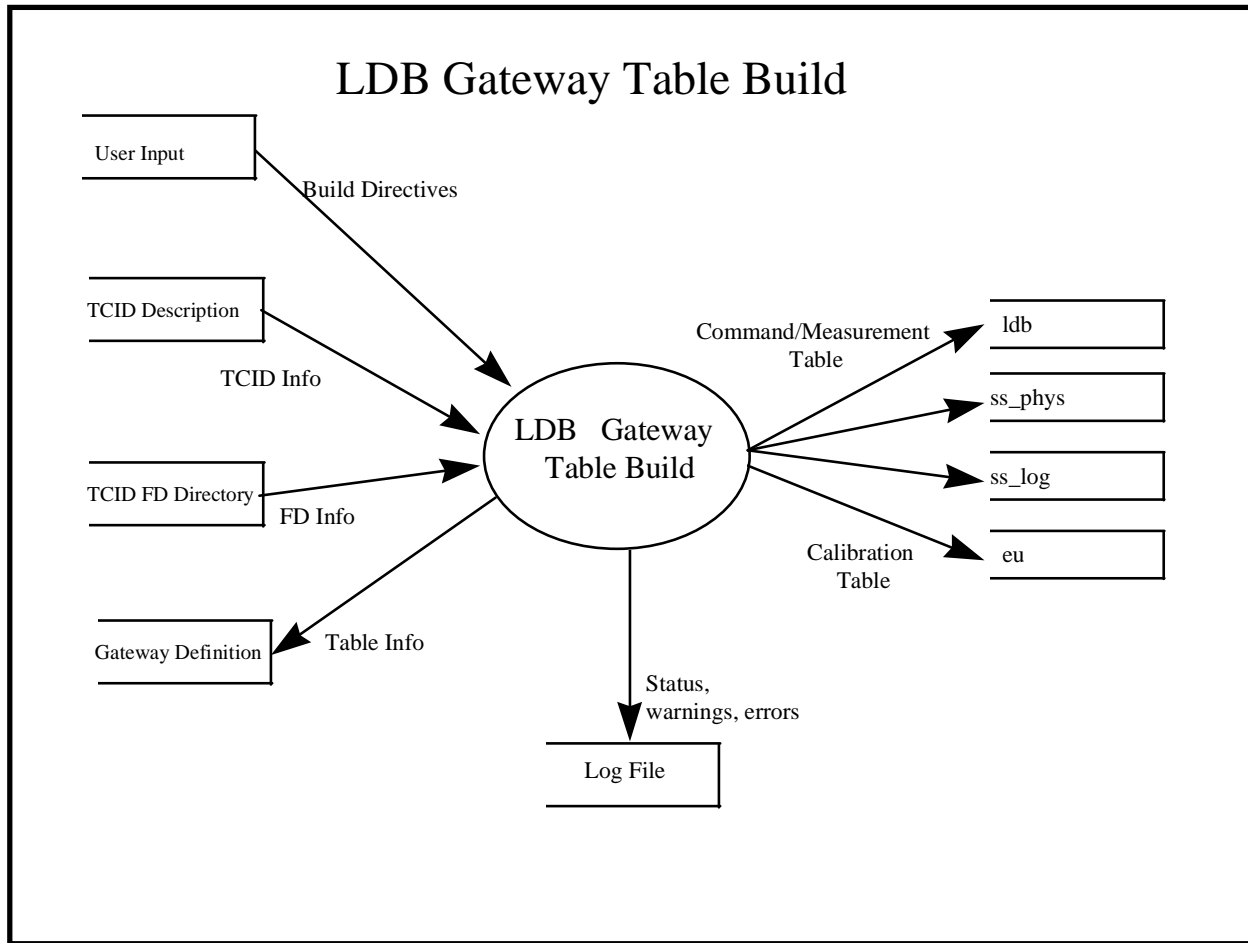


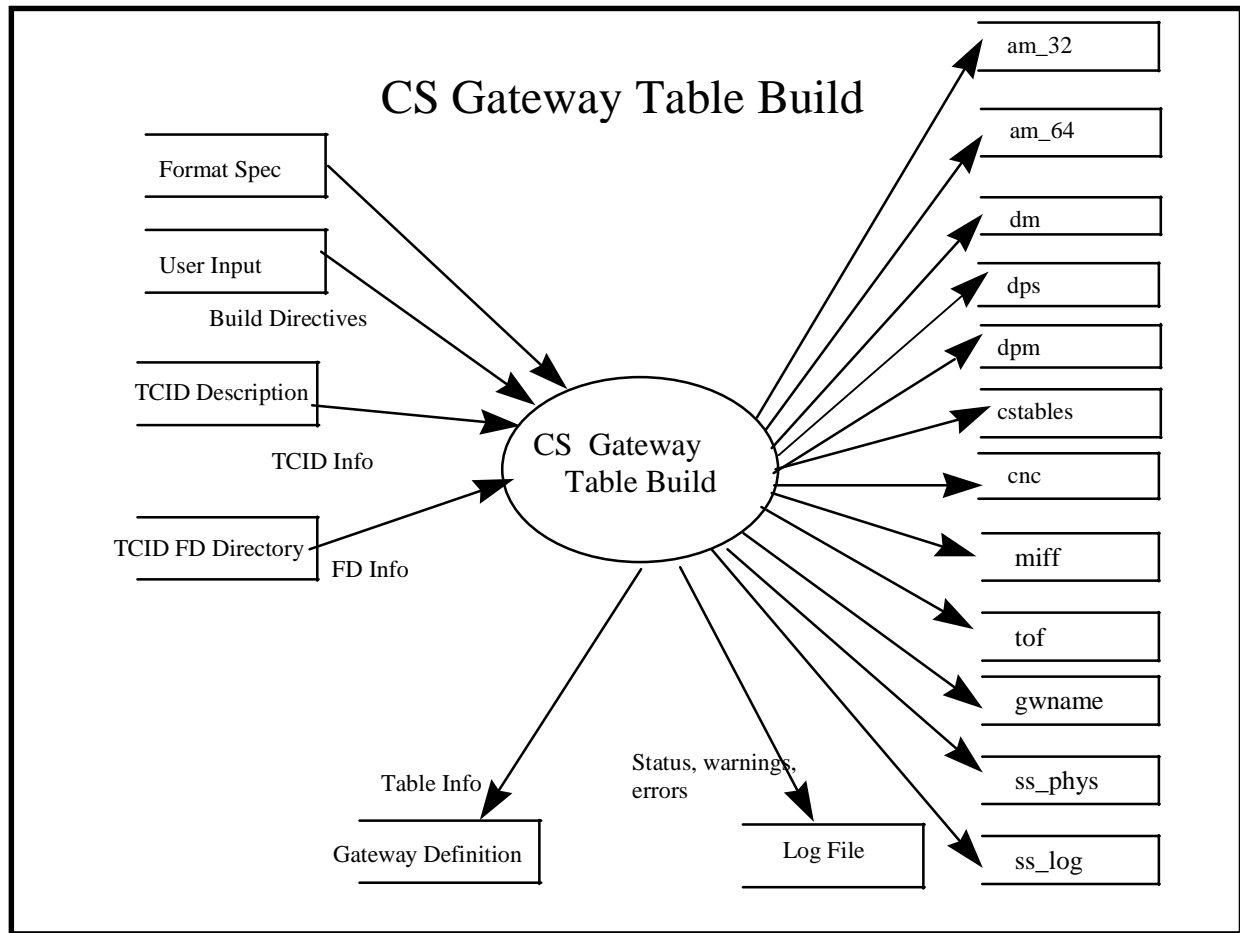
Figure 1.2-13



# Software Requirements and Design Specification

## Thor Release

### 1.2.6.4.4 [CS Gateway Table Build Detailed Data Flow](#)



[Figure 1.2-14](#)

### 1.2.6.4.5 Gateway Table Build External Interfaces

The user interface to Gateway Table Build accesses the list of valid Gateways generated by Create TCID to build and display Gateway selection criteria. Individual Gateways selections are passed to the respective Gateway Table Build processes (GSE, PCM, [CSGW](#), LDB).

#### 1.2.6.4.5.1 GSE Gateway Table Build

GSE Gateway Table Build accesses tables of the FD Directory to obtain data required for building the various tables illustrated in Figure 1.2-11 above.

GSE Gateway Table Build updates the Gateway Definition Table of the TCID to reflect the tables built for the GSE gateways specified by the user.

#### 1.2.6.4.5.2 PCM Gateway Table Build

PCM Gateway Table Build accesses tables of the FD Directory to obtain data required for building the various tables illustrated in Figure 1.2-12 above.

# Software Requirements and Design Specification

## Thor Release

PCM Gateway Table Build accesses [files tables-of-the-DBSAFE-Database](#) to obtain data defining the characteristics of the PCM telemetry streams from which data will be acquired.

PCM Gateway Table Build updates the Gateway Definition Table of the TCID to reflect the tables built for the PCM gateways specified by the user.

### 1.2.6.4.5.3 LDB Gateway Table Build

LDB Gateway Table Build accesses tables of the FD Directory to obtain data required for building the various tables illustrated in Figure 1.2-13 above.

LDB Gateway Table Build updates the Gateway Definition Table of the TCID to reflect the tables built for the LDB gateways specified by the user.

### 1.2.6.4.5.4 CS Gateway Table Build

[CS Gateway Table Build accesses the tables of the FD Directory to obtain data required for building the various tables illustrated in Figure 1.2-14 above.](#)

[CS Gateway accesses user generated files to obtain format specifications for building the required gateway tables.](#)

[CS Gateway Table Build updates the Gateway Definition Table of the TCID to reflect the tables build for the CS Gateway specified by the user.](#)

### 1.2.6.4.5.5 Gateway Table Build Message Formats

The format of messages generated by Gateway Table Build will be as follows:

“csc\_name-nnn-a: message text” where

- csc\_name will be GATEWAY\_BLD
- nnnn is a sequence of numbers associated with the message 0001 through 9999
- a is the type of message
  - E - error
  - W - warning
  - I - information
- message text is self-explanatory

All error messages (GATEWAY\_BLD -nnnn-E) will cause the FD Directory Load process to abort.

Warning messages (GATEWAY\_BLD -nnnn-W) may have an affect on processing results.

Informational messages (GATEWAY\_BLD -nnnn-I) have no effect on processing.

GATEWAY\_BLD-0001-E: ERROR OPENING (%s) FILE

GATEWAY\_BLD-0002-W: ERROR CLOSING (%s) FILE

GATEWAY\_BLD-0004-E: ERROR WRITING TO (%s) LINKED LIST

GATEWAY\_BLD-0010-E: LOGIN TO ORACLE DATABASE FAILED WITH SQLCODE(%d)

GATEWAY\_BLD-0011-W: LOGOUT OF ORACLE DATABASE FAILED

GATEWAY\_BLD-0012-E: LOGIN TO ORACLE DATABASE FAILED WITH SQLCODE(%d)

GATEWAY\_BLD-0013-E: LOGOUT OF ORACLE DATABASE FAILED

GATEWAY\_BLD-0014-E: ERROR DURING A DATABASE TRANSACTION

GATEWAY\_BLD-0015-E: ERROR DECRYPTING DATABASE PASSWORD

GATEWAY\_BLD-0019-E: UNABLE TO RETRIEVE LSDN PATH

GATEWAY\_BLD-0020-E: INITIALIZATION ERROR OCCURRED

GATEWAY\_BLD-0021-E: UNABLE TO RETRIEVE GROUP NAME

GATEWAY\_BLD-0023-E: UNABLE TO RETRIEVE HOME DIRECTORY

# Software Requirements and Design Specification

## Thor Release

GATEWAY\_BLD-0024-E: UNABLE TO RETRIEVE USER NAME  
GATEWAY\_BLD-0025-E: UNABLE TO RETRIEVE USER ID  
GATEWAY\_BLD-0026-E: UNABLE TO CHANGE DIRECTORIES TO %s  
GATEWAY\_BLD-0027-W: UNABLE TO CREATE DIRECTORY(%s)  
GATEWAY\_BLD-0050-W: NO VALID DATA FOUND IN (%s)  
GATEWAY\_BLD-0060-I: BEGINNING TO PROCESS %s  
GATEWAY\_BLD-0061-I: COMPLETED PROCESSING %s  
GATEWAY\_BLD-0100-E: 100 HZ TABLE OVERFLOW HAS OCCURRED  
GATEWAY\_BLD-0101-E: THE FOLLOWING FD(s) OCCURRED AFTER OVERFLOW:  
GATEWAY\_BLD-0103-I: HIM COUNT EXCEEDS 16  
GATEWAY\_BLD-0201-E: DATA EXCEEDS MAXIMUM LENGTH  
GATEWAY\_BLD-0300-E: INVALID DATA-TYPE(%s) READ  
GATEWAY\_BLD-0401-I: SUCCESSFULLY CREATED CMDT FOR %s  
GATEWAY\_BLD-0402-I: SUCCESSFULLY CREATED DM TABLE FOR %s  
GATEWAY\_BLD-0403-I: SUCCESSFULLY CREATED DS TABLE FOR %s  
GATEWAY\_BLD-0404-I: SUCCESSFULLY CREATED EU TABLE FOR %s  
GATEWAY\_BLD-0405-I: SUCCESSFULLY CREATED %s FOR %s  
GATEWAY\_BLD-0406-I: SUCCESSFULLY CREATED TABLE BUILD REPORT FOR %s  
GATEWAY\_BLD-0500-W: ERROR EXECUTING SQL STATEMENT %s  
GATEWAY\_BLD-0501-W: SQLCODE %d ERROR RECEIVED

Example, "GATEWAY\_BLD-0050-W: NO VALID DATA FOUND IN MY\_FILE"  
would mean:

- GATEWAY\_BLD error message
- error number 0050
- warning
- no valid data was found inside the file MY\_FILE

# Software Requirements and Design Specification

## Thor Release

### 1.2.6.4.5.6 Gateway Table Build Display Formats

The following diagrams document the HTML forms used to initiate the Gateway Table Build process.

## Gateway Tables Build

---

Submission of this completed form will display the gateway selection form.

**Software Release Level:**

<input checked="" type="radio"/> Redstone	<input type="radio"/> Thor	<input type="radio"/> Atlas	<input type="radio"/> Titan	<input type="radio"/> Scout
---	----------------------------	-----------------------------	-----------------------------	-----------------------------

TCID Name: <input type="text"/>	TCID Rev: <input type="text"/>
---------------------------------	--------------------------------

---

***Author/Curator:** CLCS Test Build and Control / USA 5222*  
***RDM:** [Larry Carr](#)*  
***Last Revised:** September 15, 1997 14:46:18 EDT*

Figure 1.2-154

# Software Requirements and Design Specification

## Thor Release

The screenshot shows a web browser window with a menu bar (File, Edit, View, Go, Bookmarks, Options, Directory, Window, Help) and a title bar. The main content area is titled "Gateway Table Build – Gateway Selection".

Submission of this completed form will initiate the build of Gateway Processor Tables for all or specific Gateways. For each GSE Gateway the user has the option of specifying a number of null entries to insert into the 10Hz polling tables. Null entries are allocated 10 at a time (e.g., entering 1 will create 10 null entries). The null entries may be used during realtime processing to change the sample rates on selected measurements. The default is all Gateways. If Gateway(s) are to be obmitted the respective box(s) should be unchecked.

**Software Release Level:** Thor

**TCID Name:** SA088T **Rev:** 0

**CSGW Gateway Selection:**  
☒ CSGW

**GSE Gateway Selection:**

<input checked="" type="checkbox"/> GS1A	<b>NULL:</b> <input type="text" value="10"/>	<input checked="" type="checkbox"/> GS2A	<b>NULL:</b> <input type="text" value="10"/>
<input checked="" type="checkbox"/> GS3A	<b>NULL:</b> <input type="text" value="10"/>	<input checked="" type="checkbox"/> GS4	<b>NULL:</b> <input type="text" value="10"/>
<input checked="" type="checkbox"/> GS5	<b>NULL:</b> <input type="text" value="10"/>		

**LDB Gateway Selection:**  
☒ LDBA

**PCM Gateway Selection:**

<input checked="" type="checkbox"/> GPCA	<input checked="" type="checkbox"/> ME1	<input checked="" type="checkbox"/> ME2	<input checked="" type="checkbox"/> ME3
<input checked="" type="checkbox"/> OIA			

*Author/Curator: CLCS Test Build and Control / USA 5222*  
*RDM: [Larry Carr](#)*  
*Last Revised:*

Figure 1.2-165

### 1.2.6.4.5.7 Gateway Table Build Input Formats

As illustrated above, two HTML forms are used to initiate the build of Gateway tables. The first form provides a list of possible Gateways to be built. Based upon the selection from the first form, a second HTML form is provided to acquire specific processing options for each Gateway.

# Software Requirements and Design Specification

## Thor Release

### 1.2.6.4.5.8 Gateway Table Build Printer Formats

Each table build process (GSE, PCM, [CSGW](#) and LDB) within Gateway Table Build provides a report written to an output file in the Reports directory which the user can view or print. Additionally, all messages will be logged to a file in the Reports directory for problem analysis.

GSE Gateway Table Build Report Example:

```
TABLE BUILD OUTPUT REPORT
TCID: SA086R          REVISION: 0
DATE: 09/28/1997 13:55:47

FUNCTION DESIGNATOR COUNT, BY TABLE, FOR GS4:
=====

      CMDT                45
      DM                   2
      DS                   3
      EU                   10
      Table_100hz_11       100
      Table_10hz_11        20
      Table_1hz_11         30
      POLLING TOTAL        150
```

### 1.2.6.4.5.9 Gateway Table Build Interprocess Communications

Gateway Table Build performs no interprocess communications

### 1.2.6.4.5.10 Gateway Table Build External Interface Calls (e.g., API Calling Formats)

Gateway Table Build does not have any external interfaces with other CSC's.

### 1.2.6.4.5.11 Gateway Table Build Table Formats

Gateway Table Build Table Formats adhere to all requirements as defined in the "GSE Gateway Services Table Load and Initialization CSC Detailed Design Specification" sections 1.3.2.4.1 through 1.3.2.4.5.

### 1.2.6.4.6 Gateway Table Build Test Plan

#### Requirements:

1.2.6.2-1.1, 1.2.6.2-1.2, 1.2.6.2-1.3, 1.2.6.2-1.4, 1.2.6.2-1.5, 1.2.6.2-1.6, 1.2.6.2-1.7, 1.2.6.2-1.8, 1.2.6.2-1.9, 1.2.6.2-1.10, 1.2.6.2-1.11, 1.2.6.2-1.12, 1.2.6.2-1.13, 1.2.6.2-1.14

#### Objective:

Tests will demonstrate that the Gateway Table Build processes correctly generate the Gateway Table files as described in the Test Build and Control Interface Description Document. Test cases are included to demonstrate both successful completion and error logging.

# Software Requirements and Design Specification

## Thor Release

### Test Cases:

1. Incorrect TCID Name  
Expected Results: Messages will indicate that the incorrect TCID Name was specified.
2. Incorrect Software Release  
Expected Results: Error messages will be output that the incorrect software release was selected.
3. Successful Gateway Table Build  
Status and information messages will indicate successful build of Gateway Tables for each Gateway specified.

# Software Requirements and Design Specification

## Thor Release

### 1.2.7 TCID Install CSC

#### 1.2.7.1 TCID Install Ground Rules

- All application program files, application message files, DDVT files, Data Fusion algorithms, and Data Health algorithms will be obtained from the CM Repository on the AUSPEX file server. These files will be transferred into the repository via the CLCS Development Environment CSCI.
- Application program files, application message files, DDVT files, Data Fusion algorithms, and Data Health algorithms in the CM Repository will be “baselined” according to TCID Responsible System (TCID-RSYS) and TCID name via the CLCS Development Environment CSCI.
- Application program files, application message files, DDVT files, Data Fusion algorithms, and Data Health algorithms in the CM Repository will be “tagged” via the CLCS Development Environment CSCI to reflect the development state of the application (e.g., unverified, integrated, verified, etc.).
- Network connectivity will be provided between the SDC and the AUSPEX file server to support access to the CM Repository and TCID Staging Area(s).
- All TCID files to be installed on a target CLCS Set will be put into a TCID Staging Area on the AUSPEX file server. The System Control CSCI will be responsible for transferring these files to the Ops CM Servers of the target CLCS sets.
- The DBSAFE CSCI will provide a stored database procedure for updating the DBSAFE Database with TCID build date.
- For Thor, application programs, application message files, DDVT files, Data Health Algorithms and Data Fusion Algorithms will not require any special products for build and will be handled by installation software directly from the CM Repository.
- For Prerequisite Control Logic (PCL) applications, the [user Applications Services CSC](#) will generate a file that associates the application to the PCL FD's. ~~This file will be obtained from the CM Repository.~~

#### 1.2.7.2 TCID Install Functional Requirements

- 1.1 TCID Install shall accept as user input:
  - TCID Name and Revision
  - System Software Configuration Identifier (SCID) Version Number
  - Selection criteria for the application software to be installed
- 1.2 TCID Install shall validate the user-supplied TCID Name and Revision against the TCID Description Table.
- 1.3 TCID Install shall validate software compatibility against the Test Build Software Version contained in the TCID Description Table.
- 1.4 TCID Install shall issue a warning if the revision level of the FD Directory exceeds the revision level of the Gateway Tables.
- 1.5 *TCID Install shall access the CM Repository to derive (based on SCID, TCID-RSYS, and user-supplied selection criteria) a list of application program names and revisions to be included in the TCID.*
- 1.6 *TCID Install shall create a unique index number for each application program to be included in the TCID.*
- 1.7 *TCID Install shall update the Application S/W Definition Table with the following information based on each application program's associated TCID-RSYS:*
  - *Application Program Index*



# Software Requirements and Design Specification

## Thor Release

- *Application Program File Type*
- *Application Program Name*
- *Application Program Revision*
- *Application Program Size (in bytes)*

**1.8** TCID Install shall update the TCID Description Table with the following information:

- Installation Revision
- Installation Revision Date and Time
- SCID Version Number

**1.9** TCID Install shall extract information from the tables that comprise a TCID to create the following set of deliverable TCID product files:

- Configuration Files
  - TCID Description File
  - Gateway Tables Definition File
  - *Application Software Definition File*
  - Responsible System List File
- Online Database Files
  - Online Database File
  - Online Database FDID Index File
  - Online Database FD Name Index
  - Enumerated Types Description File
  - Time Homogeneous Data Set File
  - Time Homogeneous Data Set Name Index
  - Calibration FD Data File
  - Calibration FD Name Index File
  - Calibration FDID Index File
  - Gateway to FD Cross Reference File

**1.10** In addition to the TCID product files identified above, the deliverable TCID products files shall include the Gateway processor files:

- GSE Gateway
  - Command/Measurement Description Table
  - Engineering Unit Conversion Table
  - Discrete Measurement Table -\*
  - Discrete Stimulus Table -\*
  - Polling Table
  - Gateway Name File
  - Analog Measurement/Stimulus Table -\*
  - Digital Pattern Measurement/Stimulus Table -\*

(NOTE: Generic versions of these tables are provide in addition to those provided in the Redstone release)

- [System Status Physical Tables](#)
- [System Status Logical Tables](#)
- PCM Gateway
  - Analog Measurement Tables
  - Discrete Measurement Table
  - Digital Pattern Measurement Table
  - Format List Table
  - Format Description Table
  - Gateway Name File
  - [System Status Physical Tables](#)

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- [System Status Logical Tables](#)
  - LDB Gateway
    - LDB Command/Measurement Description Table
    - Gateway Name File
    - [System Status Physical Tables](#)
    - [System Status Logical Tables](#)
  - CS Gateway
    - [Analog Measurement Tables](#)
    - [Discrete Measurement Tables](#)
    - [Digital Pattern Measurement Tables](#)
    - [Digital Pattern Stimulus Tables](#)
    - [CSTables File](#)
    - [CNC File](#)
    - [MIFF Tables](#)
    - [TOF Tables](#)
    - [System Status Physical Tables](#)
    - [System Status Logical Tables](#)
- 1.11** TCID Install shall include a Prerequisite Control Logic to FD Cross Reference File (generated by Application Services) in the Online Database structure of the TCID.
- 1.12** TCID Install shall copy the deliverable TCID product files from the SDC into the directory structure in the TCID Staging Area defined by the System Control CSCI.
- 1.13** *TCID Install shall copy application program files associated with the TCID from the CM Repository into the directory structure in the TCID Staging Area defined by the System Control CSCI. Program files will be based on the user-specified selection criteria.*
- 1.14** Upon completing the update of the TCID Description Table, TCID Install shall update the following items in the CLCS DBSAFE Database:
- TCID Create Date and Time
  - Test Build S/W Version
  - CLCS DBSAFE Database Revision.
- 1.15** The TCID Installation process will generate the following output:
- Files for the Online Database (refer to paragraph 1.9 and 1.11 above)
  - Files describing the TCID Configuration (refer to paragraph 1.9 above)
  - Files for each Gateway (refer to paragraph 1.10 above)
  - *Files for Application Software*
    - *DDVT*
    - *Data Fusion Algorithms*
    - *Data Health Algorithms*
    - *Application Software*
    - *Application Message Files*
  - Status report (warning, errors, information, completion codes, etc.).

### 1.2.7.3 TCID Install Performance Requirements

There are no known performance requirements for TCID Install at this time.

# Software Requirements and Design Specification

## Thor Release

#### 1.2.7.4 TCID Install Design Specifications

TCID Install is executed on the SDC to create the TCID product files from tables in a TCID database structure and to transfer these files and other files created by Gateway Table Build to the TCID staging area on a CLCS file server. TCID Install also collects the application software files from the CM Repository and places these in the TCID staging area.

#### 1.2.7.4.1 TCID Install Detailed Data Flow

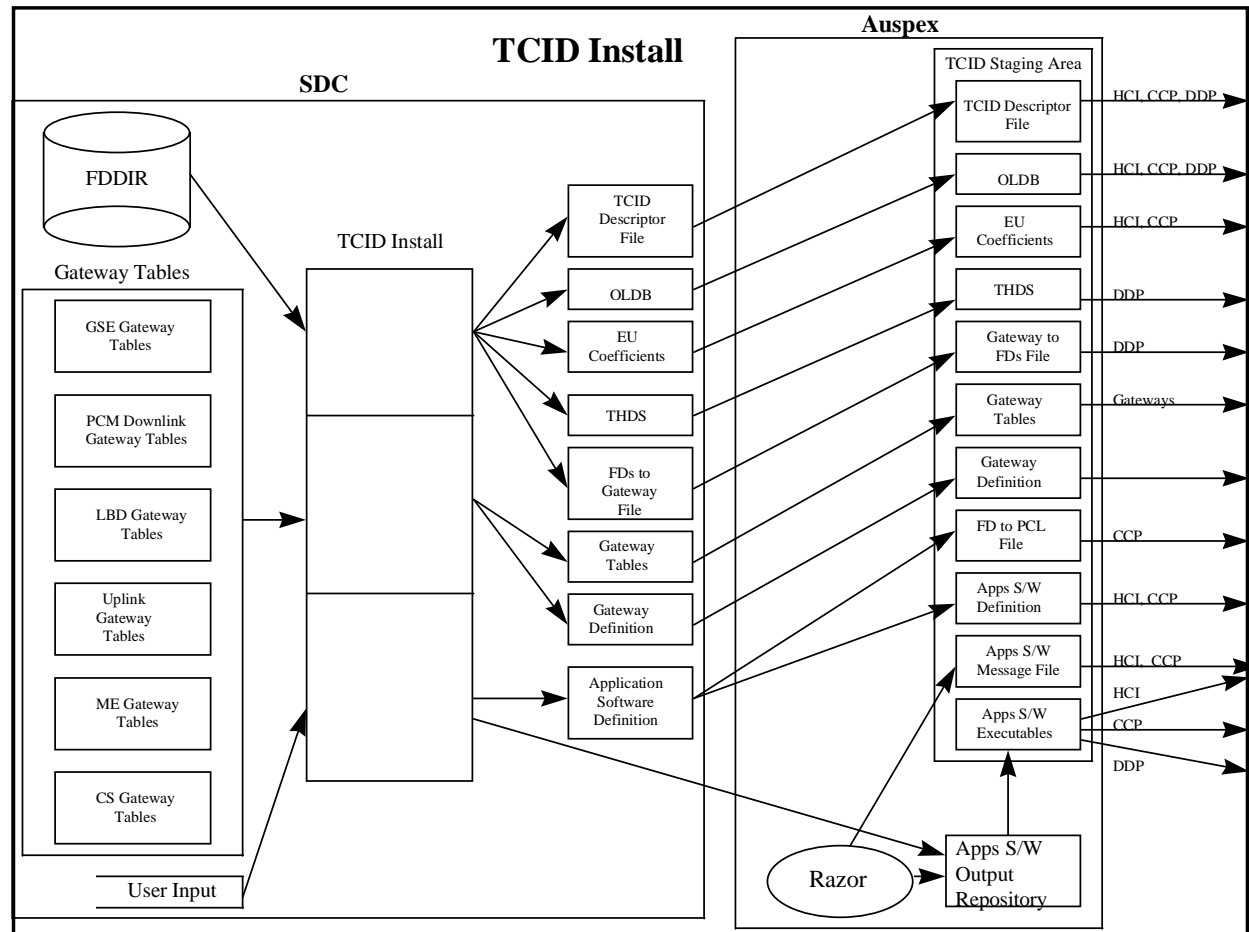


Figure 1.2-176

#### 1.2.7.4.2 TCID Install External Interfaces

TCID Install interfaces with the RAZOR CM tool to fetch application program files from the CM Repository.

TCID Install interfaces with DBSAFE to update the TCID Build date and time information in the DBSAFE Database.

# Software Requirements and Design Specification

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### 1.2.7.4.2.1 TCID Install Message Formats

The format of messages generated by TCID Install will be as follows:

“csc\_name-nnn-a: message text” where

- csc\_name will be INSTALL
- nnnn is a sequence of numbers associated with the message 0001 through 9999
- a is the type of message
  - E - error
  - W - warning
  - I - information
- message text is self-explanatory

All error messages (INSTALL-nnnn-E) will cause the FD Directory Load process to abort.

Warning messages (INSTALL-nnnn-W) may have an affect on the processing results.

Informational messages (INSTALL-nnnn-I) have no effect on processing.

INSTALL-0000-I: (tcid\_desc\_drv) Initiating Build of TCID Description File  
INSTALL-0002-E: (tcid\_desc\_drv) Invalid Number of Input Parameters  
INSTALL-0003-I: (tcid\_desc\_drv) Input Parameters: TCID=%s TCID Rev=%d  
INSTALL-0004-E: (tcid\_desc\_drv) Unable to Allocate Memory for TCID Record  
INSTALL-0005-E: (tcid\_desc\_drv) Bad return from tcid\_conn  
INSTALL-0006-E: (tcid\_desc\_drv) Bad return from get\_tcid\_desc  
INSTALL-0007-E: (tcid\_desc\_drv) Bad return from write\_tcid\_desc  
INSTALL-0008-I: (tcid\_desc\_drv) TCID Description File Build Successfully Completed  
INSTALL-0009-E: (tcid\_conn) ORACLE Connect Error Detected  
INSTALL-0010-E: (get\_tcid\_desc) TCID %s REV %d Not Found  
INSTALL-0011-E: (get\_tcid\_desc) SQL Select Error Encountered  
INSTALL-0012-E: (write\_tcid\_desc) File Allocation Failed for File: %s  
INSTALL-0013-E: (write\_tcid\_desc) Write Failed for TCID Description File %s  
INSTALL-0014-I: (tcid\_oldb\_drv) Initiating Build of Online Database  
INSTALL-0015-E: (tcid\_oldb\_drv) Unable to Allocate Memory for OLDB Structure  
INSTALL-0016-E: (tcid\_oldb\_drv) Invalid Number of Input Parameters  
INSTALL-0017-E: (tcid\_oldb\_drv) Bad Return from open\_oldb\_files  
INSTALL-0018-E: (tcid\_oldb\_drv) Bad Return from tcid\_conn  
INSTALL-0019-E: (tcid\_oldb\_drv) Bad Return from get\_tcid\_oldb  
INSTALL-0020-E: (tcid\_oldb\_drv) Bad Return from close\_oldb\_files  
INSTALL-0021-E: (tcid\_oldb\_drv) Bad Return from updt\_lct\_oldb  
INSTALL-0022-I: (tcid\_oldb\_drv) Online Database Files Build Successfully Completed  
INSTALL-0023-E: (open\_oldb\_files) Unable to Allocate OLDB\_FD File  
INSTALL-0024-E: (open\_oldb\_files) Unable to Allocate OLDB\_FDID File  
INSTALL-0025-E: (open\_oldb\_files) Unable to Allocate OLDB\_FDN File  
INSTALL-0026-E: (close\_oldb\_files) Unable to Close OLDB\_FD File  
INSTALL-0027-E: (close\_oldb\_files) Unable to Close OLDB\_FDID File  
INSTALL-0028-E: (close\_oldb\_files) Unable to Close OLDB\_FDN File  
INSTALL-0029-I: (get\_tcid\_oldb) Processing %d FDs  
INSTALL-0030-E: (get\_tcid\_oldb) SQL Select Error Encountered  
INSTALL-0031-E: (tcid\_oldb\_drv) Error Sorting FDID Index File, RC=%d

# Software Requirements and Design Specification

## Thor Release

### 1.2.7.4.2.2 TCID Install Display Formats

### CLCS TCID Install

Submission of this completed form will initiate the installation of CLCS TCID files into the Test Build Repository directory on the CLCS File Server. Select the applicable software release level and enter a valid TCID Name, Revision Number and compatible SCID Version ID. Select the products to be installed. If installing application software, supply a fully qualified pathname of an input file specifying the application program files to install.

**Software Release Level:**

☒ Redstone

☐ Thor

☐ Atlas

☐ Titan

☐ Scout

**TCID Name:**

**TCID Rev:**

**Installation Option:**

☐ Online Database

☐ Tables

☐ Applications

☒ All

**Compatible SCID Version:**

**Application S/W Specification File:**

Figure 1.2-187

### 1.2.7.4.2.3 TCID Install Input Formats

TCID Install inputs are supplied via the HTML form illustrated above. [For the Prerequisite Control Logic to FD Cross Reference file, the user must include an input file specifying the applicable initiating FD's name and the PCL program name.](#) ~~In addition, when installing application program files, a user input file specifying the TCID-Responsible System, application program name and application program revision are also required.~~ The format of this file is as follows (each item is separated by blanks or comma and each record is delimited by a newline:

Record	Item	Item Description	Format
1-N	1	<a href="#">Initiating FD Name</a> <del>TCID-Responsible System</del>	1-106 characters
	2	Application Program Name	1-128 characters

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	3	<del>Application Program Revision Number</del>	<del>1-10 characters</del>
--	---	--	----------------------------

# Software Requirements and Design Specification

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### 1.2.7.4.2.4 TCID Install Printer Formats

TCID Install will produce no specific printer output. Status and information messages will be output to stdout which is routed to the HTML form. Additionally, all messages will be logged to a file in the Reports directory for problem analysis.

### 1.2.7.4.2.5 TCID Install Interprocess Communications

TCID Install will interface with the RAZOR configuration management tool.

### 1.2.7.4.2.6 TCID Install External Interface Calls (e.g., API Calling Formats)

TCID Install will use remote shell capabilities to perform RAZOR functions required for locating and fetching application program files from the CM Repository for those application program files defined in the input file.

### 1.2.7.4.2.7 TCID Install Table Formats

TCID Install will update tables in the TCID on the SDC to reflect the creation date and time of the deliverable TCID product files. The format and content of the tables and files modified by and created by TCID Install are described in the Test Build and Control Interface Description Document.

### 1.2.7.4.3 TCID Install Test Plan

#### Requirements:

1.2.7.2-1.1, 1.2.7.2-1.2, 1.2.7.2-1.3, 1.2.7.2-1.4, 1.2.7.2-1.5, 1.2.7.2-1.6, 1.2.7.2-1.7, 1.2.7.2-1.8, 1.2.7.2-1.9, 1.2.7.2-1.10, 1.2.7.2-1.11, 1.2.7.2-1.12, 1.2.7.2-1.13, 1.2.7.2-1.14, 1.2.7.2-1.15

#### Objective:

Test Cases will demonstrate that the TCID Install successfully and accurately generates the required output files and transfers specified TCID file to the TCID Staging Area according to the Test Build and Control Interface Description Document. Test Cases will address a normal (full) TCID installation, subset installations of TCID product files and handling of invalid TCID installation parameters.

#### Test Cases:

1. Execute TCID Install with missing data for each entry field.  
Expected Results: Verify appropriate error messages appear. Verify that appropriate error messages appear in the error log file.
2. Execute TCID Install to install only Online Database files.  
Expected Results: Verify only online database files are generated and transferred to the TCID Staging area. Review the Online Database files to verify proper format and compare entries in the file with information in the Online Database view of the FD Directory. Verify that both index files correctly reference the FD Records in the Online Database FD file.
3. Execute TCID Install to install only Gateway Table files  
Expected Results: Verify only gateway table files are transferred to the TCID Staging Area.
4. Execute TCID Install to install only Application Program Files  
Expected Results: Verify the software correctly fetches and transfers the application program files to the TCID Staging Area.
5. Execute TCID Install to install all items  
Expected Results: Verify that the files are generated and transferred to the TCID Staging Area.

# Software Requirements and Design Specification

## Thor Release

### 1.2.8 FD Design Tool CSC

#### 1.2.8.1 FD Design Tool Ground Rules

- For Thor, the FD Design Tool is limited to defining discrete, digital pattern and analog FDs without supporting calibration coefficients (i.e., only those fields contained in the Online Database FD File).
- No verification/validation of user-defined fields against legal values or legal source/type/subtype combinations as defined in the DBSAFE Database or FD Directory Database is performed.
- The TCID Build Repository on the AUSPEX File Server must be accessible from the Desktop Development Environment.
- The FD Design Tool will not update the Online Database Files in the TCID Build Area on the AUSPEX File Server.

#### 1.2.8.2 FD Design Tool Functional Requirements

- 1.1 The FD Design Tool shall accept as user input:
  - TCID name and revision
  - Name of user file containing the FD data from which to create an Online Database FD record.
- 1.2 The FD Design Tool shall validate the user-supplied TCID name exists at the specified revision.
- 1.3 The FD Design Tool shall generate FD records, given user-supplied FD information, and merge the generated FD records into a local copy of the TCID's Online Database FD File.
- 1.4 The FD Design Tool shall provide the capability to define enumerated classes and associated enumerated data values and descriptions associated with digital pattern FDs.
- 1.5 The FD Design Tool shall update the Online Database FD Name Index File and Online Database FDID Index File to include pointers to the generated FD records in the Online Database FD Data File.
- 1.6 The FD Design Tool shall verify the indices in the Online Database FD Name Index File and Online Database FDID Index File correctly reference entries in the Online Database FD File.



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### 1.2.8.3 FD Design Tool Performance Requirements

There are no known performance requirements for the FD Design Tool at this time.

### 1.2.8.4 FD Design Tool Design Specifications

The FD Design Tool is executed in the Desktop Development Environment to merge user-defined FD's into a local copy of a user-defined TCID's Online Database Files. The user provides an input file in a fixed format for the FD Design Tool to process. The Online Database Files are updated locally and indexes are verified. Errors, warnings and status messages are sent to standard output.

#### 1.2.8.4.1 FD Design Tool Detailed Data Flow

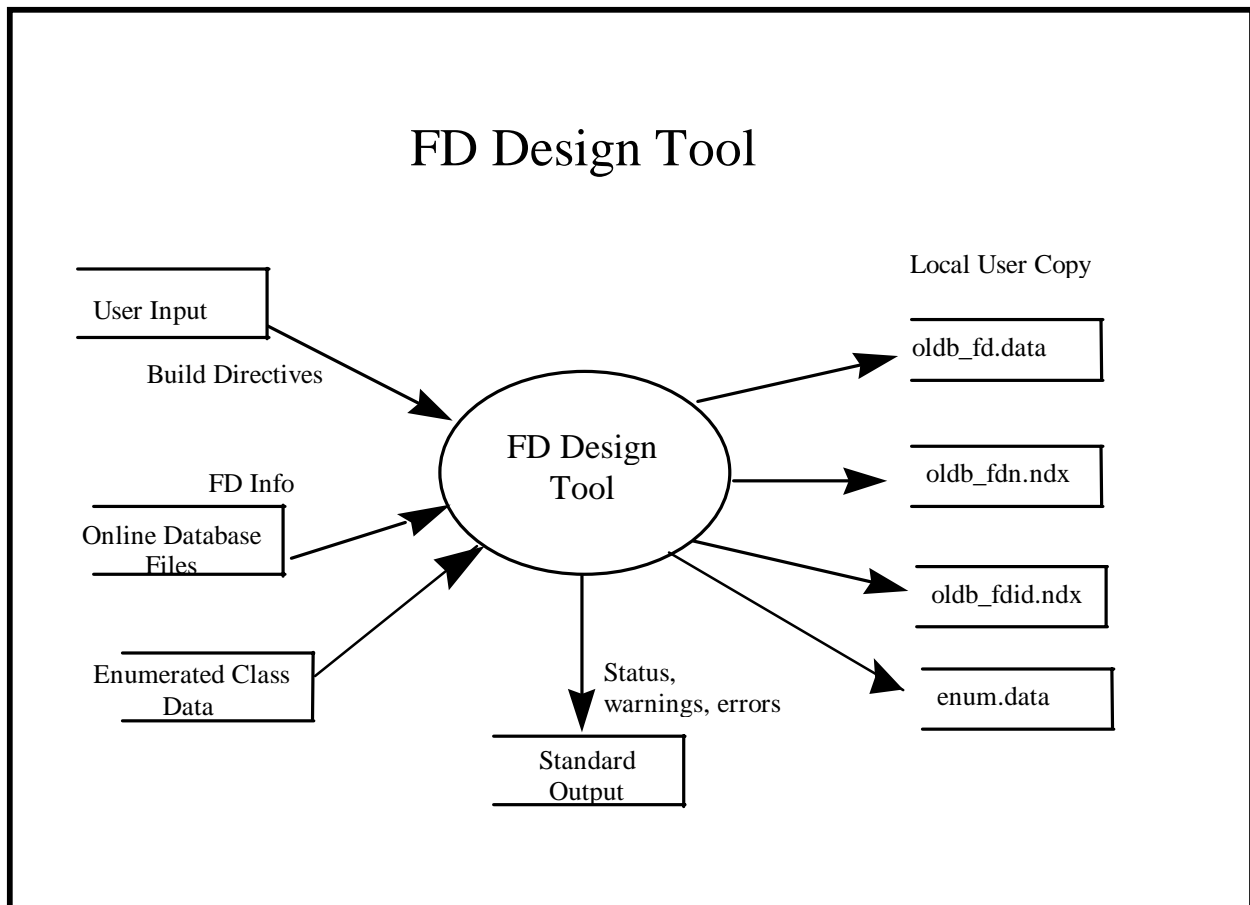


Figure 1.2-198

#### 1.2.8.4.2 FD Design Tool External Interfaces

The FD Design Tool has no external interfaces.

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### 1.2.8.4.2.1 FD Design Tool Message Formats

The format of messages generated by FD Design Tool will be as follows:

- csc\_name will be FD\_DSN
- nnnn is a sequence of numbers associated with the message 0001 through 9999
- a is the type of message
  - E - error
  - W - warning
  - I - information
- message text is self-explanatory

Messages will be generated for the following conditions:

- Errors
  - Unable to Open File %s for Read
  - Unable to Open File %s for Write
  - Unable to Open File %s for Append
  - Unable to Locate End of %s File
  - Error Reading Last FDID from %s File
  - Error Appending User Defined FD to %s File
  - Error Sorting FDID Index File RC=%d
  - Error Writing to %s File
- Warnings
  - FDID File Pointer Error
  - File Position=%ld, FDID Index fdid\_number= %d OLDB File fdid\_number=%d
  - FDN File Pointer Error
  - File Position=%d, FDN Index FD=%s OLDB File FD=%s
- Status
  - Beginning Merge of User Defined FD's for:
    - TCID = %s
    - TCID Revision = %d
    - User File = %s
  - %d FD's Have Been Added to the Online Database
  - The Online Database Now Contains %d Records
  - Merge Processing Complete
  - Opening %s file
  - Checking Look-up of FD Records by FDID Index
  - Checking Look-up of FD Records by FD Name Index
  - There Were %d Invalid Pointers Found in %d FD Name Index Records
  - There Were %d Invalid Pointers Found in %d FDID Index Records
  - Online Database Files Verification Complete!

# Software Requirements and Design Specification

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### 1.2.8.4.2.2 FD Design Tool Display Formats

The following illustrates the type of output that can be expected:

```
Usage: merge_oldb_fd.scr -t TCID_NAME -r TCID_REV -f USER_FILE

Beginning Merge of User Defined FD's for:
      TCID = SGG35A
      TCID Revision = 1
      User File = user_fd_file
21 FD's Have Been Added to the Online Database
The Online Database Now Contains 10083 FD Records
Merge Processing Complete

Opening oldb_fdid.ndx file
Opening oldb_fdn.ndx file
Opening oldb_fd.data file

Checking Look-up of FD Records by FDID Index
There Were 0 Invalid Pointers Found in 10083 FDID Index Records

Checking Look-up of FD Records by FD Name Index
There Were 0 Invalid Pointers Found in 10083 FD Name Index Records

Online Database Files Verification Complete!
```

### 1.2.8.4.2.3 FD Design Tool Input Formats

The user input file must conform to the following format. All fields are character strings that must left-justified and blank padded to the required size. Each field must be blank separated and each record must be delimited by a newline character.

Record No.	Field No.	Field Description	Size
1-N	1	Function Designator Name	10
	2	Nomenclature	34
	3	Source	6
	4	Type	4
	5	Subtype	3
	6	Engineering Unit	8
	7	Database Responsible System	6
	8	TCID Responsible System	6
	9	Logical Zero State	6
	10	Start Bit	2
	11	Length	2

### 1.2.8.4.2.4 FD Design Tool Printer Formats

The FD Design Tool does not produce any printer output.

### 1.2.8.4.2.5 FD Design Tool Interprocess Communications

FD Design Tool does not perform any interprocess communications.

# Software Requirements and Design Specification

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### 1.2.8.4.2.6 FD Design Tool External Interface Calls (e.g., API Calling Formats)

FD Design Tool does not perform any external interface calls.

### 1.2.8.4.2.7 FD Design Tool Table Formats

FD Design Tool will update a local copy of the Online Database Files. The format and content of these files is described in the *Test Build and Control Interface Description Document (84K00363)*.

### 1.2.8.4.3 FD Design Tool Test Plan

#### Requirements:

1.1, 1.2, 1.3, 1.4, 1.5

#### Objectives:

Test Cases will demonstrate that the FD Design Tool accurately updates the local copy of the Online Database Files and associated indices with FD information obtained from a user-specified input file.

#### Test Cases:

1. Execute FD Design Tool with an invalid TCID Name and Revision.  
Expected Results: Verify appropriate error messages appear.
2. Execute FD Design Tool with an improperly formatted user input file. Expected Results: Verify error messages are output indicative of the erroneous input.